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GENERAL PLAN

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ADOPTED: August 2, 1977

REVISED: June 26, 1979

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PLAN PREPARATION AND ADOPTION PARTICIPANTS

The Benicia General Plan, adopted in 1977, was drafted by the Hall and Goodhue Community Design Group, 100 Stevenson Street, San Francisco, California. (415) 543-1212

The Revised General Plan, adopted in 1977, was drafted by Martin-Carpenter-Associates, 5308 Golden Gate Avenue, Oakland, California. (415) 547-3158

Participants in the 1979 plan revision process are as follows.

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RECORD OF GENERAL PLAN AMENDMENTS

CITY COUNCIL RESOLUTION	DATE	ELEMENT AFFECTED
77 - 180	11-1-77	from PUD to R-M 2.5
78 - 46	4-4-78	from R-D to C-0 from R-S to C-N from T to R-S from R-S to C-0 from R-M 2.5 to R-S from r-m 2.5 to R-S from R-S to R-M 2.5 from R-S to R-M 2.5 from C-0 to R-M 2.5
78 - 102	7-5-78	from M-G to R-M 2.5 from M-G to R-S from M-G to R-D from M-G to C-0 from M-G to C-G from C-W to R-M 2.5
78 - 115	8-1-78	from T to R-S
78 - 170	11-21-78	from R-M 2.5 to C-0 from C-N to R-S from C-G to R-M 2.5 from R-M 2.5 to C-G from R-S to R-D

BENICIA GENERAL PLAN

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THE PLANNING PROCESS

What is a General Plan and What is Its Purpose?

The general plan is an important land management tool for use by the community and its government officials. It provides a common base of understanding for everyone involved in matters related to community conservation and development and it sets forth community goals as well as procedures and policies needed to achieve the goals. The plan allows informed decisions by joining information to organized action.

A general plan typically contains both written and illustrative materials. Its maps and diagrams provide a picture of how the community should be developed as time goes on and the plan's written material provides pertinent background information and the adopted policies and procedures needed for proper community management. The written and graphic materials in the plan should be consistent with one another - neither is subordinate to the other. The general plan land use map, while normally the principal reference, is not more important than plan policies and programs.

By state law, each community must prepare, adopt and periodically update their general plan. Nine specific elements (information topics) are required by the government code (Section 65302) and must be included in each plan. Other topics may be added at the discretion of the city council. The components of Benicia's general plan include the nine mandated elements: Land Use, Circulation, Housing, Conservation, Open Space, Seismic Safety, Noise, Scenic Highways and Safety.

In summary, the general plan performs the following functions:

1. The plan integrates the environmental, social and economic needs and aspirations of the community with the community's natural setting.
2. The plan allows the collection of a wide range of ideas and considerations into a single comprehensive document.
3. The plan simplifies the decision making responsibilities of Planning Commissioners and City Council members by enabling the review of all proposals in light of a clear picture of desirable future development.
4. The plan provides a common base of understanding which enables public agencies and private property owners to relate their projects to a common goal.

5. The plan embodies policies and procedures essential to effective city management and the timing of public improvements; it thus provides a basis on which the annual city budget can be established.

How Should the General Plan be Used?

Plan Maintenance and Plan Availability. Copies of the Benicia General Plan should be available for reference and purchase by the general public at the City Planning Office. A fee equal to the cost of reproducing the plan should be charged when copies are sold.

Related Responsibilities:

- . Planning Commission Secretary - The Secretary should be responsible for maintaining an up-to-date list of all amendments to the plan by date, City Council resolution number and affected element. This list should accompany all copies of the plan.
- . Planning Director - The Director should be responsible for providing up-to-date copies of the plan to Department heads, Planning Commissioners and City Council members. Any changes to maps which are a part of the plan should be the responsibility of the Director and an index to map changes should be kept.
- . Planning Commissioners - Commission members should have a copy of the plan available as a decision-making reference at each public meeting.
- . City Council - Council members should have a copy of the plan available as a reference on planning matters at each public meeting.
- . City Department Heads - Department heads should have a copy of the plan as a reference when asked by the City Manager or Planning Director to respond with comments on planning matters.

Plan Reference. Reference to the Benicia General Plan should be a normal part of the decision-making process of the Planning Commission and where appropriate, by the City Council. The plan is a principal reference against which privately sponsored planning and development proposals should be judged. It is also a principal reference for proposals initiated and recommended by the Planning Commission to the City Council.

How Precise is the General Plan?

Legally, The General Plan is the City Council's comprehensive statement of basic goals and policies. It is general so that an overall picture of the community can be shown. It is a plan for organized decision-making about the future development of the city.

The general plan describes, in words and drawings, locations and relationships among land uses and community groups. Precise plans are required before the general plan can be implemented. The source of these precise plans is from private land owners or in the form of project plans or specific plans prepared by city departments or consultants to the city. State law requires zoning to be consistent with the general plan. Consequently, each time the general plan is amended, the zoning map must be revised to show the exact location of land use boundaries.

How is the General Plan Related to Specific Plans?

A specific plan is used to combine aspects of the general plan with aspects of zoning or other regulatory mechanisms. A good example is the Benicia Waterfront Plan. The general plan identifies the general location of desirable waterfront park areas and the community goals and policies related to the waterfront while the waterfront plan describes in more detail the specific locations, design criteria and procedures to follow through which park land will ultimately be dedicated and improved. To be fully in conformance with state law, specific plans must address each of the mandated general plan elements. In summary, the specific plan is a method by which the city can describe, in detail, the way in which certain sensitive parts of the community should be treated when ultimately developed or improved by either private or public means.

How is the General Plan Related to the California Environmental Quality Act?

Preparation of a general plan and preparation of an EIR (Environmental Impact Report) on a general plan are required under separate state laws although the processes for preparing each are largely duplicative. In the interest of cost saving, the components of an EIR should be largely contained within the general plan and indexed accordingly.

Actions by the Planning Commission and City Council to adopt or revise a general plan or any of its elements are subject to the California Environmental Quality Act of 1970, as amended. Depending on the underlying purpose for an amendment - that is, whether its ultimate purpose is for land development, for environmental protection or simply for

clarification of information in the text or maps - a Negative Declaration may be satisfactory or an EIR required. Although the general plan should serve as a master environmental document for community development, the effects from individual development projects later on cannot be fully assessed simply because the details of development are not known. The Planning Commission and City Council therefore should reserve the right to request additional environmental information for projects as they come.

How is the General Plan Related to Zoning?

Benicia's General Plan provides a broad land management policy framework which contains both written material and maps aimed at guiding the development and enhancement of the city. Once a determination has been made in the general plan as to the optimum land use in each part of the city's jurisdiction, detailed limitations on the type and extent of use of individual properties should be adopted. These detailed limitations are commonly described by zoning and adopted by the City Council as a zoning ordinance. Zoning is one of the strongest tools for implementing the general plan but it is not the only one. Other implementing mechanisms are the subdivision ordinance, specific plans, purchase, easements, capital improvement plans and so on.

By state law (Government Code Section 65860) the zoning of land must be consistent with the adopted general plan. If the general plan describes a range of residential densities or land use intensity the designation may encompass several zoning categories so long as the maximum designated general plan intensity is not exceeded. If the general plan is amended or revised, the zoning of land must also be reviewed and amended for consistency. The zoning revision is done in conformance with the procedures set forth in the zoning ordinance. There must be a minimum period of two weeks between any hearing on a general plan amendment and subsequent hearings on zoning revision.

How is the General Plan Revised and How Often?

The general plan and amendments to the plan are typically adopted by resolution of the planning commission and city council. A minimum of two public hearings is required for any amendment - one before the Planning Commission and one before the City Council. More hearings may be held at the discretion of these decision making bodies. Following the conclusion of the Planning Commission review a recommendation is sent to the City Council. A final decision is rendered following the City Council hearing. If any changes in the Planning Commission recommendation are proposed by the City Council

the matter must first be returned to the Planning Commission for a report before final action by the Council is taken.

Many facets of a community are in balance in the general plan. Thus, revision of the general plan is a serious matter and should not be done without careful thought. However, to be an effective management tool the plan should be reviewed and updated periodically and any changes should be made when it can be determined that an amendment will result in a revised plan which is as good or better than the original.

State law mandates periodic review of the plan but also recognizes the importance of avoiding plan changes without careful review. Therefore, state law limits, to three, the number of revisions to any one of the mandatory General Plan elements in any one calendar year.

Planning Definitions

Various terms are used throughout the General Plan to describe land use relationships and planning procedures. The next few pages include the most often used terminology as well as definitions of terms peculiar to only the Benicia plan. Although this section on definitions is a part of the general plan, it is not part of any specific element of the plan thus can be amended or added to whenever deemed appropriate by the Planning Commission and City Council. Such an amendment does not constitute a project under the California Environmental Quality Act.

GENERAL PLAN DEFINITIONS

ACTION PROGRAM - An action program is a coordinated set of specific implementation measures that will be used to carry out a plan policy.

AGRICULTURE - A general land use category which includes land suitable for intensive farming practices such as the production of food crops or extensive farming practices such as the use of land for livestock grazing. This land use category also includes mineral extraction activities such as mining and quarrying.

AIR POLLUTION - The presence of contaminant substances in the air that do not disperse properly and thus can interfere with health.

AIR QUALITY STANDARDS - The level of pollutants prescribed by law that cannot be exceeded during a specified time in a defined area.

AMBIENT - The average environmental condition in a defined area prior to the introduction of significant measurable changes. Most common references are to ambient air quality or ambient noise level.

A-SCALE SOUND LEVEL - A measurement of sound approximating the sensitivity of the human ear, used to note the intensity of sound.

BACKFILL - The material used to refill an excavation.

BUFFER - A physical and/or visual separation between cities, parts of cities or adjacent land uses varying in dimension and design character according to its specific purpose. Examples are open space corridors or green belts, compatible intermediate land uses and constructed barriers such as walls and fences.

CARBON DIOXIDE (CO₂) - A colorless, odorless non-poisonous gas normally part of ambient air, a result of fossil fuel combustion.

CARBON MONOXIDE (CO) - A colorless, odorless, poisonous gas produced by incomplete fossil fuel combustion.

CARRYING CAPACITY - The amount of development an area can sustain without deterioration of a prescribed quality of life.

CITY - The City of Benicia.

CITY MANAGER - The City Manager of the City of Benicia.

CITY PLANNER - The City Planner of the City of Benicia.

COMPACTION - The reduction of the bulk of soil by rolling and tamping.

CONDOMINIUM - A form of property ownership whereby the owner purchases separate interest in the space comprising a single living unit together with other separate interests in other portions of the real property which are reserved for the exclusive use of the individual owner (ie: parking, storage space), and ownership, in common, of facilities shared with other owners in a designated project area (ie: grounds, walks, recreation facilities).

CONSERVATION - The preservation, maintenance, development and use of non-renewable resources (ie: air, water, mineral resources). The principal objective is to seek the highest economic or social benefit.

DENSITY, GROSS - The gross land area in acres divided by the total number of residential units.

DENSITY, NET - The gross land area in acres less the area devoted to roads and utilities divided by the total number of residential units. When calculating net density, areas that will be dedicated in permanent open space to the City or to a homeowner's association are included in the density calculation. In areas that are already developed, the equivalent net density can be calculated by using one-half the street right-of-way area abutting the developed site.

DISSOLVED SOLIDS - The total of disintegrated organic and inorganic material contained in water. Excesses can make water unfit to drink or use in industrial processes.

DRAINAGE BASIN - See Watershed

DREDGING - To remove earth from the bottom of water bodies using a scoop or suction hose.

DUMP - A site used to dispose of solid wastes without environmental controls.

ENVIRONMENT - The sum of all external conditions affecting the life, development and survival of an organism.

ENVIRONMENTAL IMPACT REPORT - A document required under the California Environmental Quality Act of 1970, as amended, for major projects, to help in making decisions about the positive and negative effects of the undertaking and various alternatives.

GOAL - A goal is the ultimate purpose or end toward which effort is directed. Goals are typically general in nature and unmeasurable.

GROUNDWATER - The supply of fresh water under the earth's surface that forms a natural reservoir.

HABITAT - The sum of environmental conditions (earth, plants, moisture, air) in a specific place occupied by an organism.

HOLDING POND - A pond or reservoir usually made of earth built to store runoff for purposes of controlling flow of water and permitting silt to settle out before water enters drainage channels.

HYDROLOGY - The science dealing with the properties, distribution and circulation of water.

IMPLEMENTATION MEASURE - An implementation measure is an action, procedure, program or technique employed to carry out plan policies. (ie: Zoning, Subdivision Ordinance, Easements, Purchase of Land).

INDUSTRIAL PLANNING AREA - The Industrial Planning Area is comprised of the lands of the Benicia Industrial Park and consists of two major components.

1. Heavy Industry - Manufacturing, processing and warehousing facilities extending from Suisun Bay into the canyons west of East 2nd Street.
2. Port - Warehousing, assembly, office and compatible residential and commercial uses extending from the port and shoreline into the area around Pine Lake.

LAND USE - GENERAL PLAN - City Council's policy regarding the types of uses which will be permitted at each location in the City.

LAND USE - ZONING - The intensity of land use, in conformance with General Plan land use policy, is established by zoning. If the General Plan designates 'general commercial' use, for instance, the zoning for the property sets forth legal minimum requirements for allowable sizes and types of general commercial facilities and the parking required.

LAKE PLANNING AREA - The Lake Planning Area includes the Lake Herman basin comprised of City owned lands immediately around the lake and surrounding lands to the west, north and east. The lower reaches of Sky Valley are included in this planning area.

LOT - A portion of a recorded subdivision intended as a unit for transfer of ownership or for use as designated by the General Plan.

LOT AREA - The area of the horizontal plane bounded by the front, side and rear lot lines.

LOT, CORNER - A lot bounded on two or more sides by street lines; where the angle of intersection of lot lines does not exceed 135 degrees.

LOT, COVERAGE - The area of the lot occupied by principal and accessory buildings.

LOT DEPTH - One half the sum of the two side lot lines.

LOT, FLAG - A lot having minimum frontage on a public street, an access drive located between two other lots and its building site area to the rear of the other lots; the narrow access drive connecting the larger building area and the building site together resemble a 'flag' in plan.

LOT FRONTAGE - The length of boundary of a lot along a public street.

LOT, INTERIOR - A lot bounded on both sides by other lots.

LOT WIDTH - One half the sum of the front and rear lot lines.

MULTIPLE FAMILY RESIDENTIAL - A dwelling structure containing two or more residential units.

MULTIPLE USE - Joint use of land for more than one purpose (ie: grazing land used for recreational purposes).

NITROGEN DIOXIDE (NO_2) - The combination of nitric oxide, a gas formed during combustion in automobile engines, with oxygen; it is a major component of photochemical smog.

NON-CONFORMING USE - Any land use which was lawfully established but which does not conform to current regulation for the area in which it is located.

OUTFALL - The place where treated water from a waste treatment plant is discharged into receiving waters.

OXIDANT - A substance containing oxygen that reacts chemically in air to produce a new substance; it is a primary source of photochemical smog.

PARENT ZONE - The basic, established zoning designation to which combining zones are attached. A parent zone establishes a maximum residential density in cases where a Planned Unit Development approach to development is selected.

PARTICULATES - Fine liquid or solid particles such as dust, smoke, mist, fumes or smog, found in the air.

PHOTOCHEMICAL SMOG - Air pollution caused by not one pollutant but by chemical reactions of various pollutants emitted from different sources.

PLANNED UNIT DEVELOPMENT - A large, integrated development providing maximum flexibility in design while adhering to a comprehensive plan. It must comprise a single tract of land or two or more contiguous tracts under single ownership where net density does not exceed that normally permitted under the parent zone, except for bonus exceptions, and where it can be shown that the proposed location, height and design of structures, landscape and open spaces will provide for better protection of the natural topography or other site features and will provide an equal or better living environment than that which would be provided by conforming to all normal regulations of the zoning ordinance.

POLICY - A policy is a guide to action implying commitment.

RUNOFF - Water from rain or irrigation that flows over the ground surface and returns to streams and waterways.

SHARED DRIVEWAY - A driveway shared by two or more separate properties. For reasons of topography or historic ownership patterns the only feasible or reasonable means of access to one property may be in the form of an easement across an adjacent property. In other cases, to avoid separate curb cuts, the owners of adjacent properties may wish to construct a single access drive along a common property line and grant easements to each other.

SINGLE-FAMILY ATTACHED - See Townhouse.

SINGLE-FAMILY DETACHED RESIDENTIAL - Single family home on a single building lot completely detached from surrounding dwelling units.

SKY VALLEY PLANNING AREA - The Sky Valley Planning Area consists of those areas in the Benicia watershed from which runoff flows through Sky Valley into Lake Herman but which are outside of the Lake Planning Area.

SOLID WASTE - Useless, unwanted, or discarded material with insufficient liquid to be free-flowing.

SPRAWL - Unplanned development of open land.

STANDARD - A standard is a specific, quantified guideline.

TOPOGRAPHY - The physical features of the surface of the earth including relative elevations and the position of natural and man-made features.

TOWNHOUSE - A form of residential development having no sideyard setback such that adjacent units share a common side wall however individual units may have private front and rear yards. This form is sometimes referred to as Single Family Attached Residential.

UPLAND PLANNING AREA - The Upland Planning Area is comprised of the higher elevation rolling hills north of the main ridgeline, and the steep canyon and boundary hills at the west edge of the City. The planning area extends generally from the View Hill north to the City owned Lake Herman property.

VIEW HILL - The highest hilltop above Panorama Drive from which people can view the Carquinez Strait and most parts of Benicia is called 'the view hill'. This hill, which contains a water storage reservoir and several antennae, is also sometimes called antennae hill.

WATER-ORIENTED PLANNING AREA - The Water-Oriented Planning Area is comprised of the predominantly residential areas of Benicia generally having an orientation to the Carquinez Strait and the Benicia waterfront. The planning area contains two major components represented by two census tracts:

1. Central Benicia - extending below Highway 780 to the waterfront.
2. Southampton and other hill areas extending above Highway 780 to the main ridge line.

WATERSHED - The land area that drains into a stream.

BENICIA GENERAL PLAN INTRODUCTION

The Planning Context: The Future of Benicia

Benicia is a water-oriented community with attractive historic and environmental qualities. Although envisioned as a metropolis by its founders in 1847, Benicia was inland from the main ocean routes of the time, and thus did not grow like the cities of San Francisco and Oakland which became the metropolitan center of the Bay Area.

Residents regard their waterfront and the old downtown, which is centered on First Street and contains antique shops, historic buildings and central commercial activities, to be Benicia's focus. Also important are the historic military buildings and the emergence of major industry in the former U.S. Army Arsenal east of the central district. The grassy rolling hills, which have historically provided a backdrop to the north of the old downtown, are now being developed with new housing.

Over the last 15 years urban expansion has spread dramatically from the center of the Bay Area, along the eastern edges of the Bay and through the inland valleys of Contra Costa County. Benicia is at the tip of this urban growth at the present time. Benicia is influenced from the west by Vallejo, which is on the Interstate 780 growth corridor. More importantly, Benicia is influenced from the south along the Interstate 680 corridor which brings new growth from the Concord-Walnut Creek basin. From these sources, Benicia can expect an increase in population and corresponding commercial and industrial growth over the next 25 years.

Benicia enjoys deep water moorage, freeway and main line railroad access. A number of factors besides Benicia's accessibility and attractive setting contribute to such a forecast. Among these are relatively inexpensive and readily available sites for new industry in Benicia, a low tax assessment rate, which helps minimize local housing costs, and availability of Bay Area Rapid Transit in nearby Concord and Pleasant Hill.

The Solano County Special Census of 1975, conducted by the State Department of Finance, provides the following community profile:

Total 1975 Population - 10,754 Persons	Total 1975 Dwellings - 4229
. Median Age - 28 Years	. Homeowners - 66%
. Racial Composition - 92% Caucasian	. Renters - 34%
. Percent Employed - 42% of Total	. Single Family - 63%
. Unemployment Rate - 4.9% of Total	. Vacancy Rate - 6%
. Median Household Income - \$12-15,000	. Family Size - 2.7

STATEMENT OF COMMUNITY GOALS

Citizen Involvement

During the drafting of the Benicia General Plan in 1974-75, a 20 member Comprehensive General Plan Committee consisting of residents and community leaders appointed by the City Council, contributed time and effort to the formulation of community goals. A general plan questionnaire was distributed to the committee members to facilitate consideration of Benicia's assets and problems in the context of planning.

The questionnaire results indicated that Benicia means many things to many people. The City is characterized by its waterfront, its industrial area, the historic arsenal structures, a composite of historic landmarks, parks, commercial buildings and residences in the older part of the city and new development in the hills north of Highway 780. An overall physical and emotional landscape exists. For example, fine old residential areas offer not only interesting old houses but mature trees and the lack of annoying through traffic. First Street, its historic buildings and its waterfront terminus seems to best express Benicia's residential, retail and recreational character while the industrial park and new residential development characterize employment base and growth. Improvement and enhancement of these assets is important. Also important is giving proper attention to the improvement of areas which are in transition from one use to another, to the confinement of strip commercial development and to avoiding poorly designed apartments which detract from the visual appearance of the city.

During the 1978-79 general plan review process, the community goals adopted in the original plan were reviewed at the regularly scheduled Planning Commission of January 11, 1979, and reconfirmed. The official general plan goals are listed in the tables on the next several pages and are indexed according to the general plan element or elements to which each goal statement is related.

ADOPTED GENERAL PLAN GOAL	RELATION TO GENERAL PLAN ELEMENTS											
	LAND USE					OTHER ELEMENTS						
	RESIDENTIAL	COMMERCIAL/INDUS.	PUBLIC FACILITIES	RECREATIONAL	HISTORIC	CIRCULATION/ TRANSPORTATION	HOUSING	CONSERVATION/ OPEN SPACE	SEISMIC SAFETY	NOISE	SCENIC HIGHWAYS	COMMUNITY SAFETY
1. To plan, in general, for a low density, residential character for Benicia.	■											
2. To buffer housing from normally incompatible industrial land uses with appropriate intermediate land uses, by use of topography, or by use of landscaping	■							■				
3. To plan for Benicia to have an ultimate population of approximately 25,000 people.	■											
4. To minimize high density apartment type development	■											
5. To plan for public health and safety by avoiding residential development in areas which may be threatened by severe geologic hazards.	■								■			■
6. To strengthen the connection between new residential development and First Street, which is Benicia's main commercial center.	■	■				■						
7. To strengthen the economic vitality and appearance of First Street with new uses which are compatible with historic preservation, with landscaping and with strong ties to the waterfront.		■			■							
8. To provide for improved automobile parking facilities to handle traffic as the downtown area becomes more active in the future.		■				■						
9. To provide direct access to industrial destinations from regional rail and freeway systems.		■				■						
10. To continue the separation of truck traffic serving the industrial park from automobile routes within the City.		■				■						
11. To expand employment possibilities with water-oriented industrial and docking facilities east of East Fifth.		■										

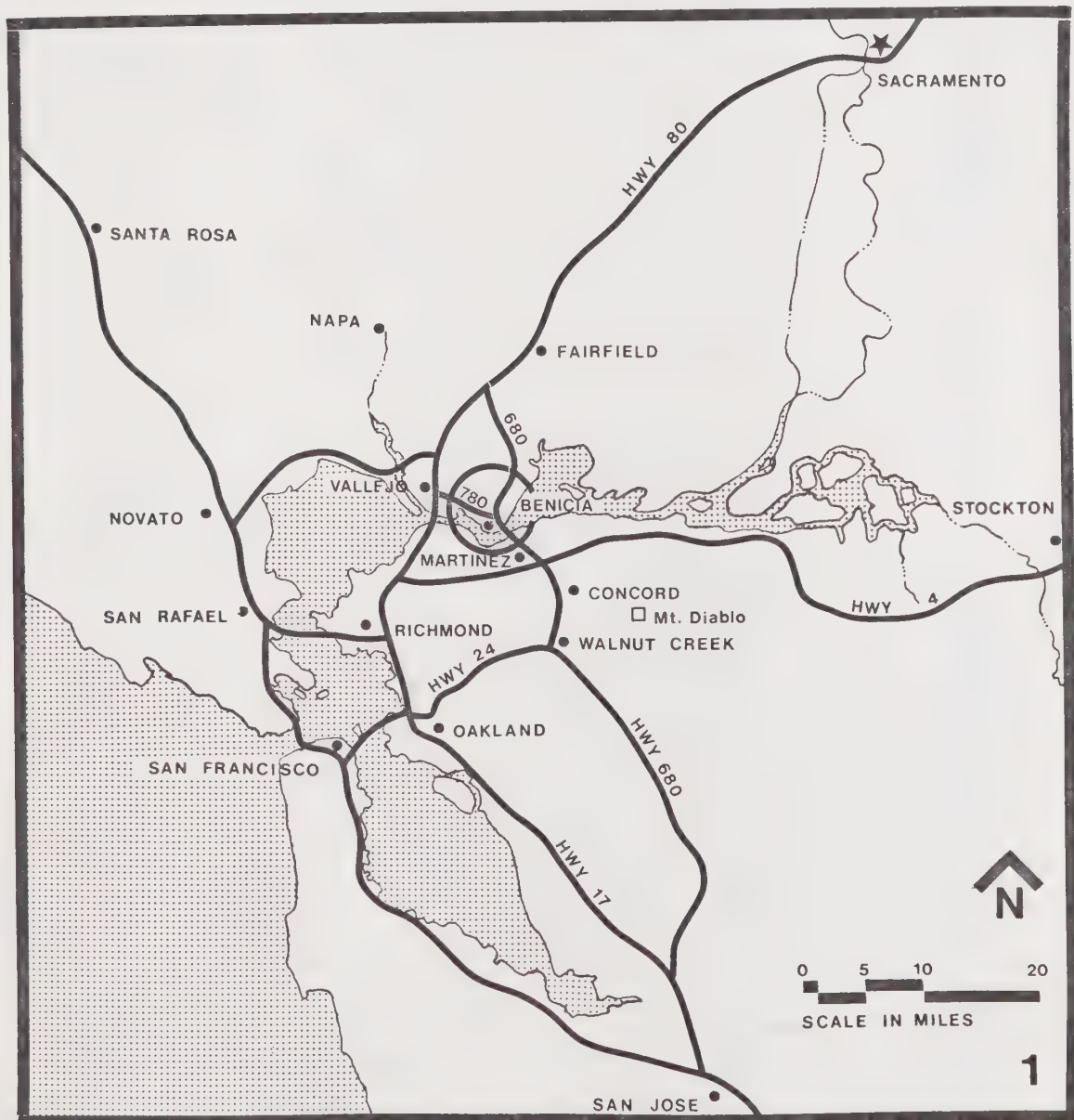
ADOPTED GENERAL PLAN GOAL	RELATION TO GENERAL PLAN ELEMENTS											
	LAND USE					OTHER ELEMENTS						
	RESIDENTIAL	COMMERCIAL/INDUS.	PUBLIC FACILITIES	RECREATIONAL	HISTORIC	CIRCULATION/ TRANSPORTATION	HOUSING	CONSERVATION/ OPEN SPACE	SEISMIC SAFETY	NOISE	SCENIC HIGHWAYS	COMMUNITY SAFETY
12. To improve the economic and recreational potentials of the urban shoreline and to protect valuable fish and wild-life habitat.		■						■				
13. To plan for water-oriented parks and commercial recreation facilities at appropriate places along the waterfront, especially to the west of East Fifth Street.		■		■								
14. To develop strong land use controls to effectively guide future directions of Benicia's physical growth.	■	■	■	■	■	■	■	■	■	■	■	■
15. To work closely with the school district to improve existing schools and to provide new facilities rather than crowding existing ones as the population grows.			■									
16. To continue to improve City water supply and waste disposal systems for existing and new development.			■									
17. To define the boundaries of the natural area surrounding Lake Herman for a major scenic park.				■				■				
18. To improve the visual acceptability of the industrial district with landscaping and to retain structurally sound historic buildings.		■			■							
19. To clean up and enhance Benicia's overall historic character with emphasis on the downtown buildings.					■			■				
20. To develop improved access from outlying neighborhoods to the City's center which is First Street.						■						
21. To identify and enhance the key visual features of Benicia's setting including the shoreline and portions of undeveloped hillsides which give a pleasant appearance to the City and which help structure Benicia's development.								■			■	

ADOPTED GENERAL PLAN GOAL	RELATION TO GENERAL PLAN ELEMENTS											
	LAND USE					OTHER ELEMENTS						
	RESIDENTIAL	COMMERCIAL/INDUS.	PUBLIC FACILITIES	RECREATIONAL	HISTORIC	CIRCULATION/ TRANSPORTATION	HOUSING	CONSERVATION/ OPEN SPACE	SEISMIC SAFETY	NOISE	SCENIC HIGHWAYS	COMMUNITY SAFETY
22. To identify and preserve key land forms which separate Benicia physically and visually from adjacent communities.								■			■	
23. To plan from adequate fire and police service to new areas of City growth.			■									■
24. To establish a course of action for dealing with future growth which can be understood by both citizens and by public officials.	■	■	■	■	■	■	■	■	■	■	■	■
25. To take the initiative for liaison and participation in the actions of agencies which actions affect Benicia.	■	■	■	■	■	■	■	■	■	■	■	■

REGIONAL AND LOCAL SETTING

Regional Setting

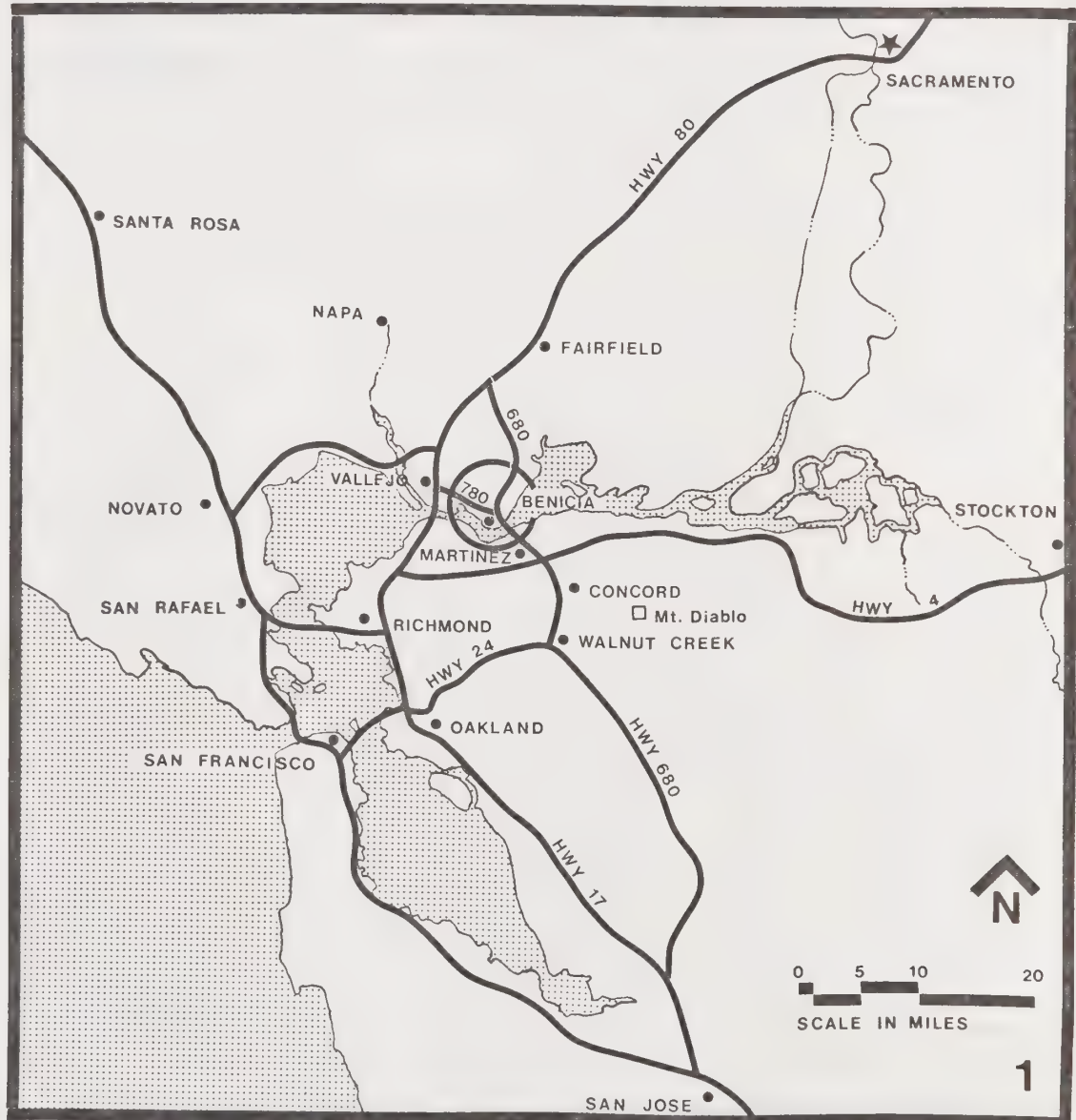
Benicia is located approximately 35 miles from the Golden Gate along the north shore of the Carquinez Strait which connects the Sacramento and San Joaquin River Delta east of Benicia, with San Pablo Bay to the west. The city is built upon the peninsula of land which reaches south from Solano County creating the prominent bend in the Carquinez Strait. Across the Strait to the south are the Contra Costa cities of Martinez and Concord. Views are to the Strait, the foothills of northern Contra Costa County and to Mt. Diablo in the distance. Benicia is easily reached by Interstate Highway 780 from the west and by Interstate Highway 680 from the north and south.



REGIONAL AND LOCAL SETTING

Regional Setting

Benicia is located approximately 35 miles from the Golden Gate along the north shore of the Carquinez Strait which connects the Sacramento and San Joaquin River Delta east of Benicia, with San Pablo Bay to the west. The city is built upon the peninsula of land which reaches south from Solano County creating the prominent bend in the Carquinez Strait. Across the Strait to the south are the Contra Costa cities of Martinez and Concord. Views are to the Strait, the foothills of northern Contra Costa County and to Mt. Diablo in the distance. Benicia is easily reached by Interstate Highway 780 from the west and by Interstate Highway 680 from the north and south.



Army Arsenal lands in 1964, coordinates the use of land for industrial purposes although many of the sites within the industrial park are now owned by private firms. The Southampton Corporation, a major home-builder, has developed a majority of the area north of Interstate Highway 780 and still owns undeveloped land although most of the developed sites have been sold to private homeowners.

The relationship of Benicia to its nearby neighbors, the existing City Limits and the location of major jurisdictions discussed above are shown on Map 2 on the next page.

WATERSHED BOUNDARY

PLAN STUDY AREA

LAFCO - 1973
BENICIA SPHERE
OF INFLUENCE LINE

BENICIA INDUSTRIES
OUTSIDE CITY - SEVERAL SITES

BENICIA INDUSTRIES
INCLUDES PRIVATE OWNERSHIPS

BENICIA CITY LIMITS

CITY OWNED
LAKE HERMAN

SOUTHAMPTON
CORPORATE LANDS AND SUBDIVISION

BENICIA

VALLEJO

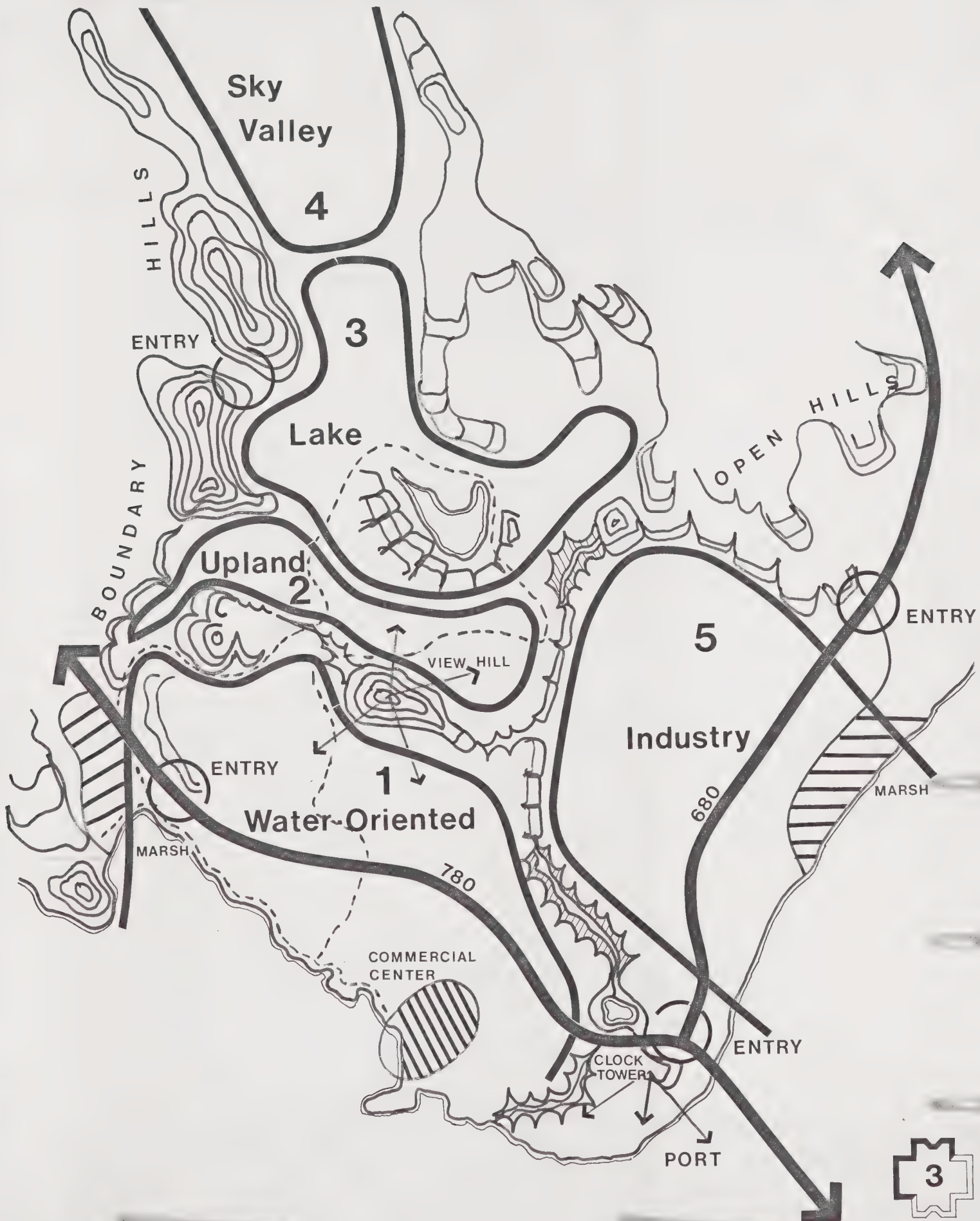
BENICIA GENERAL PLAN

OWNERSHIP &
JURISDICTION

2

0 4000 16000
SCALE IN FEET NORTH

KEY FEATURES OF THE PLAN



KEY FEATURES OF THE BENICIA GENERAL PLAN

The Plan Concept

The plan concept is to use natural environmental determinants to guide the integration of the needs and aspirations of the community with the natural setting. Thus, the plan is aimed at strengthening the city's sense of being a definite place in the Bay Area, emphasizing the unique Benicia waterfront and historic downtown and enhancing Benicia's residential environment, important regional industrial facilities and port potential.

A Special Identity for Benicia

Benicia has historically been isolated by distance from other cities in Solano County. This is especially true along Interstate 680 towards Fairfield to the north. On the south Benicia is bounded by the Carquinez Strait. However, as Vallejo's suburbs reach east, Benicia's separate identity will diminish. The Plan proposes to retain Benicia's separate identity by establishing a visual buffer comprised of boundary hills along the common border with Vallejo to the west, and by containing the future City of Benicia within natural topographic limits.

To accomplish this, the Plan proposes that Benicia's sphere of influence be extended westward to include the ridges above Southampton Bay State Park so that development in Vallejo does not occupy the ridgelines, and northward to include the Sky Valley watershed which feeds Lake Herman and could affect Benicia's water resources. The boundary ridges would extent, on the west, from Southampton Bay (Dillon Point) to the portals at Lake Herman Road and north to contain Sky Valley. Undeveloped rangeland along Interstate 680, much of which is in agricultural preserve status, is proposed to remain in preserve status and thus impart a rural character while containing Benicia on the north.

Gateways to the City

Benicia's image is very dependent on what is seen from the road as people approach and move into the City. Benicia's separate identity and sense of containment can be strengthened by the experience of entering the City through several natural parklike gateways. The Plan identifies four distinct gateways: one at the portals of Lake Herman Road west of the lake and three strategic entry points on the freeway system.

Very important to Benicia is the freeway system which serves as the front door to the community. Benicia's character is established by what is seen from the road. Therefore, views to the water, views

to industry and views to other uses which are immediately adjacent to the roadway are important. The Plan proposes that Benicia not make the mistake of many suburban communities which orient non-community uses such as shopping centers and chain restaurants to their freeways. Benicia's recreational and historic assets will serve to draw visitors from the road.

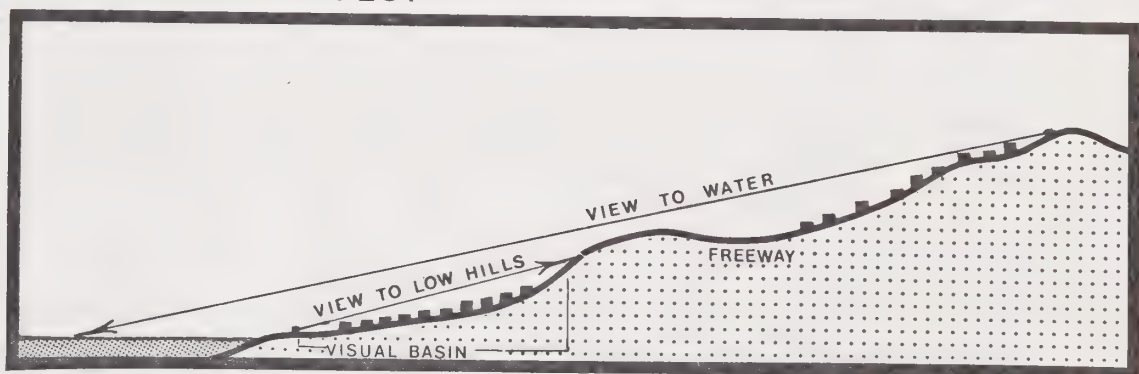
In many ways the freeway system acts as the front yard to Benicia. While some of the freeway is landscaped, much has been left in an unkempt condition. The Plan urges the City to convince the State Department of Highways to complete the landscaping treatment of median strip areas and along the sides of the road particularly at interchanges. Only in this way can the view of Benicia be properly framed.

Open Space Framework

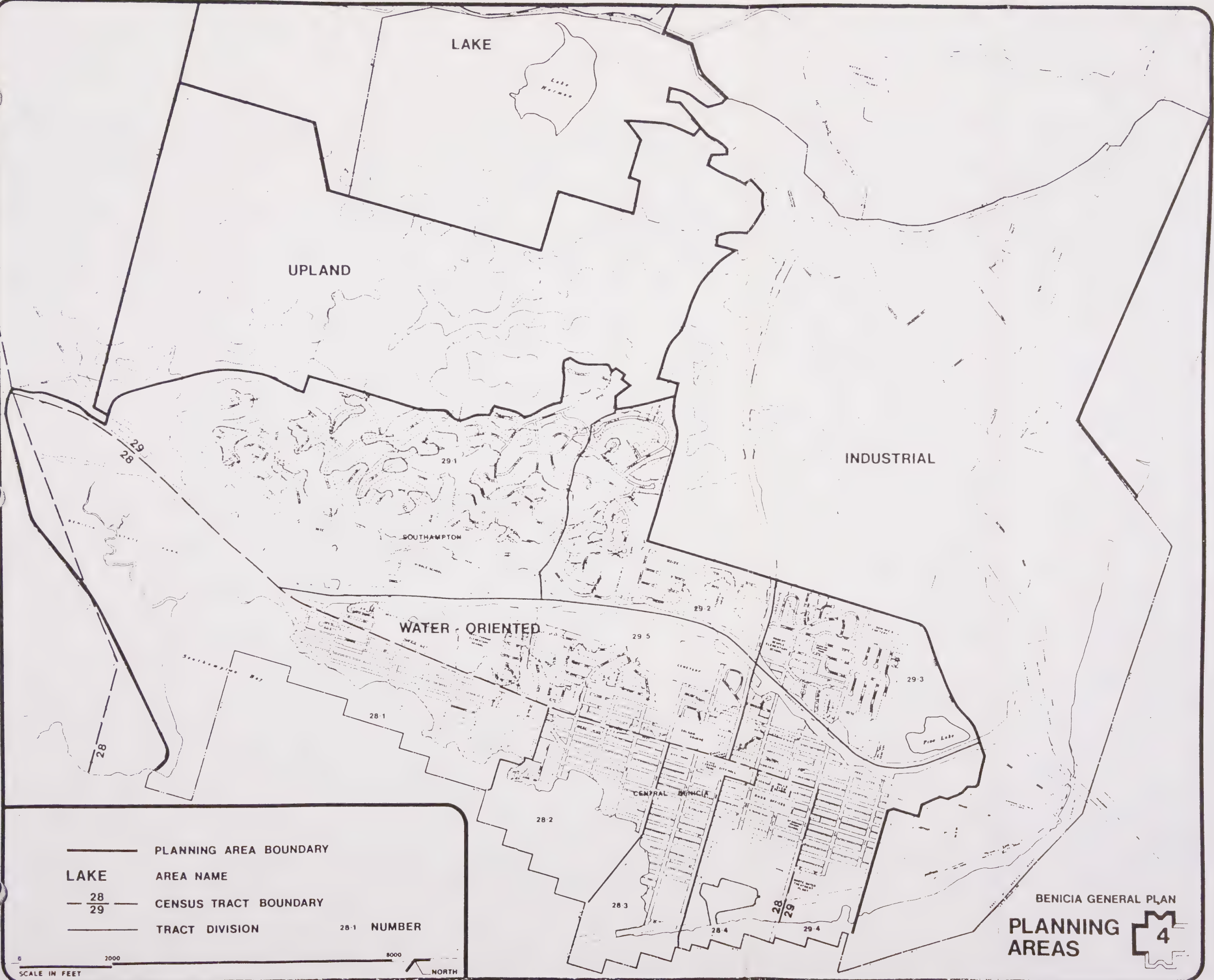
Future growth and development of Benicia should be compatible with the natural environment and should reflect significant ecologic and geologic considerations. Open space is used to form a framework within which urban development occurs.

Benicia's rolling hills constitute a deceptively complex topography. Lower hills above the old downtown tend to interrupt lines of sight to the newer hill area development north of Highway 780, thereby creating a 'visual basin' which gives the downtown a pleasant village scale.

TOPOGRAPHIC EFFECT



Topography also defines each of the planning areas shown on Map 4.



LAKE

UPLAND

INDUSTRIAL

WATER ORIENTED

SOUTHAMPTON

29 5

29 3

28 1

28 2

28 3

28 4

28 29

29 4

Pine Lake

PLANNING AREA BOUNDARY

LAKE

AREA NAME

28
29

CENSUS TRACT BOUNDARY

TRACT DIVISION

28-1 NUMBER

SCALE IN FEET 2000 8000 NORTH

BENICIA GENERAL PLAN

PLANNING AREAS



Map 3, the Key Features Diagram, identifies the principal components of the open space framework and also locates generally the major planning areas. The Plan recognizes a 'Water-Oriented' Planning Area containing the old downtown, central Benicia and the portions of Southamptton which lie below the main ridgeline and generally face the Carquinez Strait. The 'Major Industrial' Planning Area to the northeast is contained by the hills below Lake Herman Road on the north, the slopes above East 2nd Street to the west, the main ridgeline to the south and Suisun Bay on the east. Three, future residential development areas are defined by steep hillsides, high promontories and canyons north of the main ridgeline facing the Carquinez Strait. These are the 'Upland' Planning Area directly behind the main ridgeline, the 'Lake' Planning Area where the hills slope inward towards Lake Herman, and the 'Sky Valley' Planning Area comprised of the watershed of Sky Valley. Each of the five planning areas have a slightly different character by proposed use and orientation. The Plan for Benicia outlines a program of expansion in orderly phases adding each successive development area to City water and sewer lines and developing the outermost areas last.

The Waterfront

Benicia's greatest natural asset is its water orientation. There are views from the land to the Carquinez Strait and Suisun Bay, and there are opportunities for direct contact with the shoreline along pedestrian pathways and at the Benicia marina. Both the visual and physical exposure to water is special to Benicia and should continue to be a positive force in the City's future.

The Plan for Benicia proposes to emphasize the visual water orientation by preserving major promontories and open hills along the skyline of the 'Water-Oriented' Planning Area. The Plan proposes that an overlook park be created on the major central promontory overlooking the Carquinez Strait and that the promontory be here referred to as 'the View Hill'. A second, water view park is proposed for the point of land where the Arsenal Clock Tower and Commandant's House overlook the maritime activities of Benicia's port. The area considered for the maritime park should correspond to lands the City has under its ownership and control.

The Plan for Benicia proposes to emphasize the physical water orientation by encouraging the expansion of opportunities for direct contact with the shoreline. Shipping facilities are shown utilizing the entire area from Army Point to East 5th Street,

Benicia's Marina occupies the area between East 5th Street and First Street, and pedestrian access along board-walk shops and at street-end parks should be developed from First Street west to Benicia State Park.

Waterfront Plan. A Specific Plan for the development of the shoreline from East 5th Street west to Benicia State Park has been adopted by the City of Benicia in order to facilitate implementation of the General Plan. Particularly important is its relationship to the Land Use and Open Space Elements of the General Plan. The Waterfront Plan contains a pedestrian-bicycle path which undulates along the waterfront touching the bluff or water's edge where City ownership is feasible. This will tie into a combination of bicycle paths and pedestrian ways shown in other parts of the City.

Special Area Plan. In addition to the Waterfront Plan, the City has adopted a Special Area Plan for purposes of compliance with the Bay Conservation and Development Commission (BCDC). This Plan covers the same area from East 5th Street to Benicia State Park and includes land up to the alley between E and F Streets to the north and also a strip of land along the waterfront running east from East 5th Street to the George Miller Memorial Bridge. This special area plan also facilitates implementation of the General Plan and is included as an appendix to the General Plan.

First Street Core Area

The commercial importance of First Street is identified in the Plan and various measures proposed to enhance this area. The Plan shows the lower end of First Street becoming a pedestrian scale, commercial peninsula with the Carquinez Strait to the west and south and the marina to the east. Private shops along a board-walk are to be developed in accordance with the Waterfront Plan facing east towards Southampton Bay, and commercial-recreation activities are to be developed facing east towards the marina.

All major commercial uses are concentrated along the First Street axis. A definite beginning for First Street occurs at the waterfront and a definite terminus to commercial activity at Solano Square.

Historic Emphasis

The Plan for Benicia proposes to emphasize Benicia's great wealth of historic buildings and sites. An historic route is proposed to take visitors past well known monuments on First Street, and to connect through town to the historic park at the Arsenal Clock Tower Fortress. A special historic district is proposed centered on First Street to insure that new buildings will be compatible with old:

The Plan for Benicia proposes to emphasize the importance of industry for community income and employment. Special attention is given to the edges between industrial development areas and other land uses in the community. A buffer between industry and residential uses is shown west of East 2nd Street and north of the Highlands subdivision. Special attention is also given to suggesting logical places for heavy industry, light industry, shipping and an industrial office and research park. Completion of the freeway interchange on Interstate Highway 680 serving the heavy industry area in 1978, serves to minimize earlier conflicts between industrial truck traffic and residentially oriented traffic when both were forced to use the East 5th Street interchange in the past.

LAND USE ELEMENT

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LAND USE ELEMENT

Purpose

The Land Use Element is intended to describe the general distribution and intensity of present and planned future use of all land areas within the City's jurisdiction. Land areas outside the City limits but within the City's Sphere of Influence as recognized by the Local Agency Formation Commission (LAFCO) are also included for purposes of suggesting compatible uses in the event of future annexations and as a basis for cooperative planning with other jurisdictions. For each land use category, the appropriate population density and/or building intensity is specified.

Relation to Other Elements

The Land Use Element is heavily influenced by each of the other Plan elements. While each land use type has certain basic land area requirements and service needs, the distribution of uses is significantly influenced by the availability of circulation and access, geologic circumstances, noise factors and the desire of residents for open space and aesthetic qualities.

Land Area and Land Use

Approximately 12 3/4 square miles are contained within the Benicia City Limits (January 1, 1979). Of this total approximately 8 1/2 percent is submerged land making up part of the Carquinez Strait and Suisun Bay. Above the line of high tide, approximately 74 percent of the land area within the City Limits is presently committed to urban or suburban development (including parks and open space) while the balance is comprised of rolling hills which are undeveloped or in extensive agricultural use.

Benicia is viewed by its residents as primarily a residential community although the amount of land committed to other uses is significant. The table below indicates the share of total land resource currently committed to each major land use category:

RESIDENTIAL	13.0 percent
COMMERCIAL	1.0
INDUSTRIAL	27.0
CIRCULATION	10.5
PARK AND UNDEVELOPED	40.0
WATER	8.5
TOTAL	100.0

Land Use Compatibility

There are inherent differences among land use types which help determine the most appropriate location for each land use type. The locational designations set forth in the Land Use Element are meant to provide for compatibility between a particular use and the features of its setting such as land slope, geologic condition and noise levels. It is also meant to provide for compatibility between adjacent land uses. Low density residential uses, for instance, are generally compatible with medium density residential uses and, in fact, the medium density category may effectively be used as a transition from lower to higher densities in some cases. It is not appropriate, in most instances, to change the designation for land to permit medium density or high density uses in the midst of an area committed to low intensity use. When it is necessary or desirable to place widely diverse land use types near each other, such as residential uses adjacent to manufacturing uses, or a single land use into an incompatible setting, such as a residential use adjacent to a loud noise source, the use of a buffer to provide separation is recommended.

A land use compatibility chart is included in the Noise Element to illustrate the types of uses which are most compatible with each of the noise zones. The Noise Element also contains a discussion of noise buffers. Uses in buffer zones between divergent land use types is included at the end of the Land Use Element.

Residential Land Use

Planning Context. Nearly 13 percent of the area in the City Limits of Benicia is committed to residential use. This will increase to about 23 percent as the General Plan is implemented. Residential land use is important because from residents grows the demand for additional business and employment areas, public facilities, roads and parks.

Residential Land Use Categories

Single family homes and some duplex and fourplex units comprise the predominant form of residential development in Benicia. Due to past forms of City development and the resultant variations in lot size throughout the older sections of Central Benicia, a uniform residential density does not exist. The density equivalent of a duplex on a 4000 square foot lot fronting on a 60 foot wide street, for instance, is 15 to 16 units per net acre. In contrast, a single family home on a 5000 square foot lot is equivalent to about 6 units per net acre. While the equivalent density of the

duplex unit would place it in a high density category, it is not usually appropriate to designate such densities immediately adjacent to lands in the lower single family density. Thus the duplex use is defined as a separate use category in the General Plan for purposes of describing these existing units. The proliferation of new, isolated, duplex designations within areas presently designated for predominantly single family use should not be permitted.

Four residential categories are described in the Land Use Element and discussed in the following sections. Each of the General Plan residential land use designations is intended to include several of the more specific zoning categories described in the Benicia Zoning Ordinance.

RESIDENTIAL LAND USE CATEGORIES	DENSITY RANGE (Units/Net Acre)
Low Density	0 - 7
Duplex	Applies to Older Duplex Uses Only
Medium Density	8 - 12
High Density	13 - 32

Low Density Residential. The low density residential designation refers to the use of land for single family detached residences solely or in conjunction with agricultural pursuits. It is the predominant residential land use category in Benicia as in most suburban communities. In Benicia's General Plan it is shown affecting some 18 percent of the area within the City Limits and as much as 52 percent of the total future residential population. The low density category represents the character found in Benicia's fine established neighborhoods where pleasant yards and mature trees front local streets and it includes all of the single family development north of Interstate Highway 780.

The maximum density permitted in the low density category is seven units per net acre; this is equivalent to the R-S5 residential zone which recognizes the older 5000 square foot lots. The maximum residential density which is permitted in new subdivisions should be six units per net acre which is equivalent to the R-S6 residential zone characterized by the current minimum 6000 square foot lot size.

It is recognized that there are duplexes, triplexes and fourplexes existing in the older single family neighborhoods of Benicia. These

residential uses, existing in single family neighborhoods as of July 1, 1977, should be declared 'allowable uses within single family zones', but after said date only single family homes should be permitted as new uses.

On the land use map a single graphic pattern is used to indicate all forms of single family residential development. Where it is appropriate to designate specific density limits within the broader range suggested for the low density category, a separate number is superimposed on the land use map. In portions of the Upland Planning Area, for instance, a maximum density of three units per gross acre is specified in order to meet topographical constraints, to reflect distance from Central Benicia and to maintain the desired rural character in outlying areas near the City owned Lake Herman property. The Lake Planning Area density is one unit per gross acre.

Medium Density Residential. This residential land use category includes multiple residential uses where lot coverage is relatively low. It represents the situation where large older homes on large lots have been converted to duplexes and it represents a density which can be achieved in new development where townhouses or cluster housing is used to preserve open space for the use of residents but where a standard apartment development would be inappropriate. The medium density land use category can be an important factor in the future because it allows clustering of buildings, not possible in most single family detached development, such that the effects of freeway noise on outdoor use areas can be shielded. The medium density category also provides sufficient outdoor space to accommodate good landscaping thus helping to reinforce the community's desired image of low density development.

The maximum residential density permitted in the medium density category is 12 units per net acre which includes new duplexes, the R-M4 zoning district and the maximum density for mobile homes permitted by the Benicia Zoning Ordinance. On the land use map, the medium density residential category represents approximately nine percent of the total future residential land commitment and would contribute some 11 percent of the total future residential population.

Mobile home uses typically require large, relatively flat sites for development whereas conventional buildings in the same density category do not. Consequently, all land bearing the medium residential density designation should not be automatically considered suitable for mobile home use. The expansion of existing sites and the creation of new sites warrants careful consideration due to the extent of grading which may be required and the visual changes which may result.

High Density Residential. This residential land use category represents the most intensive forms of residential development. It includes existing apartment densities and new apartment and townhouse projects where lot coverage is relatively high. The high density category is important because it provides the opportunity to create low cost owner units (apartment condominiums), high quality, low maintenance units (condominium projects) and apartment rentals for families who do not wish to purchase homes or who do not have sufficient assets to do so.

The maximum residential density permitted in the high density category is 32 units per net acre, roughly equivalent to the maximum density which could be achieved by use of the planned development approach on land bearing the parent R-M1.25 residential zone. On the land use map a single graphic pattern is used to indicate all forms of high density residential development. Unless otherwise noted on the map, the maximum permitted residential density intended is 14 units per net acre which is equivalent to the R-M2.5 zoning designation. Where higher densities are recommended, the higher maximum is indicated by a number superimposed on the land use map. In all cases it must be understood that the City's Planned Unit Development regulations allow a developer, under certain circumstances, to exceed the maximum density by 10 percent.

On the land use map the high density residential category represents approximately 12 percent of the total residentially designated land within the City limits and would ultimately contribute some 39 percent of the total future residential population of Benicia.

Apartment densities should be concentrated in the vicinity of First Street close to shopping and community facilities and overlooking the amenity of the marina east of First Street. The Plan recognizes existing apartment development along the waterfront and near convenience commercial nodes at Southampton Road, East 5th Street and West 7th Street. These existing apartment nodes near outlying commercial centers should not be expanded but rather contained and buffered from surrounding low density residential uses by medium density residential type uses.

Apartment densities may also be located in the future north of Interstate Highway 780, near arterial transportation routes and concentrated near neighborhood commercial centers in the Water-Oriented and Upland Planning Areas.

Commercial Land Use

Planning Context. Approximately one percent of the developed area within the City Limits is committed to commercial land use. This will increase to a little over 2 percent as the General Plan is implemented. The various categories of commercial land use are important because of the employment opportunities they represent and because the businesses involved provide goods and services needed by the community. Five separate categories of commercial land use are recognized in the plan as listed below:

1. Neighborhood Commercial
2. Waterfront Commercial
3. Business and Professional Offices
4. Thoroughfare Commercial
5. General Commercial

Neighborhood Commercial. The neighborhood commercial land use designation is applied to convenience commercial centers which are limited in size and oriented primarily to the immediate neighborhood served. The combined area of lots devoted to each center should not exceed approximately 4 gross acres. The neighborhood commercial land use is the most restricted thus the least intensive of the various commercial categories. It is intended to minimize the need for all community residents to drive into Central Benicia for certain everyday necessities while at the same time creating minimal traffic disturbance in outlying residential areas. Appropriate uses in a neighborhood commercial center are small grocery stores and drug stores. A gas station may be appropriate in a neighborhood convenience center but should be permitted only after careful consideration pursuant to a conditional use permit as specified in the Benicia Zoning Ordinance. In all cases, neighborhood convenience centers should be oriented primarily to the service of surrounding residential neighborhoods and not towards exploitation of freeway traffic.

In some instances existing centers such as the one at the intersection of West 6th Street and Military Highway are given the Neighborhood Commercial designation to limit the potential for expansion. This is consistent with the overall plan objective of emphasizing the importance of the First Street core area as the commercial heart of Benicia.

On the land use map existing neighborhood convenience commercial facilities are recognized at West 5th and J Streets, and near the freeway exit at East 5th Street. The future commercial development north of Interstate Highway 780 on Southampton Road near Chelsea

Hills Drive and the proposed commercial development on Southampton Road near Hastings Drive are intended to have a neighborhood orientation although the designation is shown as general commercial to allow a wider variety of retail and service businesses. The special nature of the East 5th and Military Highway location is discussed under a separate heading.

Approximate locations for future convenience commercial centers are indicated on the land use map in the Upland Planning Area. The precise location should be established near the intersections of the more important roads that will serve future residential neighborhoods.

Waterfront Commercial. A special commercial land use category has been applied to most of the land surrounding Benicia's marina and extending west beyond First Street to the shoreline. Its purpose is to focus on the unique qualities of water orientation and history characteristic of the lower end of First Street and ultimately to create a pedestrian-scale, commercial peninsula bounded by the marina and Carquinez Strait below F Street.

Appropriate uses include retail shops and services directly supportive of marina and boating activities and other uses such as offices and restaurants overlooking the water. Substantial backup parking is necessary. Existing antique shops should be encouraged to remain in the area to help maintain pedestrian interest and to promote the desired rustic character of future buildings.

Visitors who are now attracted to Benicia's antique shops and historic sites will continue to return in even greater numbers in the future. As the waterfront commercial area develops there will be more demand for overnight lodging. Benicia can become a place for people to get away for a weekend to fish and go boating, a pleasant place for business and industrial clients to stay, and a place for those who enjoy shopping for antiques and learning about Bay Area history. Benicia should encourage the development of boat hotels and inns near First Street and the waterfront.

Business and Professional Offices. Business and professional offices include small medical clinics, business offices and banks. Although these uses are permitted in general commercial and neighborhood commercial zoning districts, there are some areas where the designation is intended exclusively for such uses. The business and professional office use can be used as an appropriate buffer between residential uses and more intensive commercial areas. The office use typically generates low traffic volume, except for some savings banks and similar business service uses, and can be designed at a residential scale thus minimizing impacts on residential areas.

Business and professional offices are specifically designated near the neighborhood commercial center at West 5th and J Streets, just

north of Solano Square, near the general commercial area on Southampton Road, near the East 5th Street and Military Highway commercial center and near the industrial park headquarters on Grant Street. No specific designations have been given in the Upland and Lake Planning Areas north of Highway 780.

Thoroughfare Commercial. This land use category includes such uses as gasoline stations, motels and eating establishments located near freeway offramps for the convenience of travellers and residents. The Planning Commission should be careful to promote concentrations of these uses in only a few locations and should insist that the buildings be tastefully designed and that signs are aimed at identification of the use rather than advertisement of a product or service. Existing thoroughfare commercial uses are designated at the important East 2nd Street interchange leading to Central Benicia. As the marina area develops in the future some review of the possibility of thoroughfare commercial uses near the East 5th Street interchange should be undertaken.

General Commercial. The general commercial land use category represents the most intensive form of commercial development which is characteristic of Benicia's First Street core area. The historic core area extends from Solano Square on the north to the waterfront on the south and overlaps somewhat with the waterfront commercial area. This historic center should continue to be the main commercial center providing shopping and services for the community. All commercial uses at other locations should be limited in extent and used to fulfill special requirements such as the need for enlarged neighborhood convenience in order to emphasize the importance of the core area.

Although general commercial land use is most important along the First Street corridor there are other locations where the broader variety of possible uses permitted under this category is appropriate. General commercial land use is designated in the vicinity of East 5th Street and Military Highway to provide for auto service and parts, appliance sales, and similar uses. It is designated in the vicinity of the Benicia Industries headquarters to accomodate a wide variety of offices and shops in historic structures once rehabilitation is complete and it is designated for two sites on Southampton Road in order to permit some general commercial uses to be included in what are intended to be large neighborhood centers serving the Southampton area north of Interstate Highway 780.

A triangle of land between the Columbus Parkway interchange and Highway 780 is presently under County jurisdiction and is planned for commercial use. A general commercial designation or thoroughfare commercial designation should be considered by Benicia upon annexation.

East Fifth Street and Military Highway. A separate discussion of this area is necessary because of its special orientation. Some types of commercial uses are not appropriate for locations in a neighborhood convenience center or in the downtown commercial core yet are necessary for the proper functioning of the community. Furniture sales and large appliance sales, for instance, typically require large amounts of storage and display space which may be too costly in the core area. Automobile related services and parts require space but also tend to be noisier and dirtier uses than other commercial uses. A concentration of these uses has developed in the East 5th and Military Highway vicinity. This location has good access from the rest of Benicia along arterial streets. While the special commercial orientation should be encouraged to continue by the Planning Commission and City Council, the expansion of the area west of East 4th Street or southeast of L Street should be discouraged so as not to create an extended commercial strip causing potentially dangerous traffic access and congestion problems.

Open Space Land Uses

Open space refers to both used and unused land. As a general term, open space refers to specific land use designations including developed and undeveloped park lands, agricultural lands, water areas and marshland habitat. As a specific designation, the term refers to undeveloped land which is intended to be retained in an undeveloped state in the future. The conversion of some areas currently designated open space in the General Plan for park or recreation purposes in the future may be in the best interest of the community but should be subject to review. The detailed discussion of open space is contained in the Open Space Element.

Land Used for Circulation

The amount of land used for freeways, local roads and railroads in most communities is significant. In Benicia at the present time, some 10 percent of the total area within the City Limits is devoted to public roads. The detailed discussion of circulation is contained in the Circulation Element.

Industrial Land Use

Planning Context. Approximately 27 percent of the total area within the City Limits of Benicia is earmarked for industrial use. About 155 of the total 2300 acres (2/3) in the Benicia Industrial Park consist of improved or graded sites (January 1, 1979). In the next 10 years, site improvements (grading, utilities, roads, landscape) will be completed on most of the remaining land which includes the land surrounding Pine Lake and the hilly area north of the Highlands Subdivision. In the long term future, land north of Lake Herman Road which is owned by Benicia Industries but outside the present City Limits, may be annexed to the City (See Major Jurisdictions, Map 2).

Benicia is fortunate to have a regionally competitive industrial facility which not only has room to expand in the future but which provides a tax and employment base for Benicia. The revenue from the industrial park allows Benicia to have one of the lowest tax rates in the Bay Area (4.7269 per \$100 assessed valuation, 1978-79). The port and industrial area of Benicia, which contains both manufacturing and non-manufacturing firms, consists largely of land which, between 1852 and 1964, was part of the Army Arsenal in Benicia. Additional land has been purchased by Benicia Industries, operator of the industrial park, so that a total of about 2300 acres is now contained within the present City Limits. Many storage buildings left from the Arsenal were initially available for industrial use and most have been leased. Construction of major new facilities is now underway on a number of sites. One legacy of the Arsenal are the heavy concrete bunkers which now are quite difficult to remove and add to the site improvement cost in the hilly area north of the Highlands Subdivision.

The largest employers in the Benicia area are manufacturers of petroleum products, automotive parts and metal products. Employment in non-manufacturing is related to hardware, trucking, auto import processing and import-export shipping. As many as 15,000 vehicles may be stored in Benicia at any one time awaiting clean up and shipment by carrier, ship or rail. The General Plan provides for the Benicia port to expand its container handling equipment and to develop new docking backup facilities with adjacent rail spurs, from Army Point at the George Miller Memorial Bridge over to East 5th Street.

Industrial uses are divided into two major land use categories distinguished primarily by the type of traffic generated and the

intensity of manufacturing, assembling or loading activities which occur:

Light Manufacturing

Heavy Manufacturing

Light Manufacturing. The light manufacturing land use category includes industrial office centers, research and development facilities, light or 'clean' assembly activities (ie: electronics, small appliances) where traffic generation is relatively low and oriented more towards automobiles than heavy trucks. Long term storage facilities (ie: business records, low demand inventory, public storage) also fall into this category. The land use designation, light manufacturing, may be applied to specific sites or may be referenced in policy statements regarding the type of use which should be developed at various locations even though the assigned land use designation may provide for heavy manufacturing uses.

Light manufacturing uses are intended to have well landscaped grounds and parking areas and control exercised over building design. As such, these uses can serve as appropriate buffer uses between heavy industrial uses and other community uses.

The most appropriate locations for light manufacturing uses are in the vicinity of the industrial park headquarters (at the east end of Military East), among the historic buildings and sites in the Pine Lake area (ie: camel barns, powder magazine, post hospital), and on the hilly area north of the Highlands Subdivision. All of these locations can be reached by either the East 5th Street or Industrial Park freeway interchanges.

Heavy Manufacturing. The heavy manufacturing land use category includes all of the major processing and handling facilities (ie: refinery, warehousing, heavy assembly, port and backup) where traffic consists of heavy truck and rail equipment and where the manufacturing processes involve 'noisy' or 'dirty' machinery. Many of the uses are not intended to be highly visible and accordingly, building design is more functional than aesthetic and site landscaping can be minimal. Design control for sites highly visible from Highway 680 is presently exercised by Benicia Industries through the conditions of sale and/or lease of property (ie: North Park Road area). Heavy manufacturing uses typically require large sites (sometimes several hundred acres) with flat or very gradual slopes to facilitate heavy truck and rail access.

The most appropriate locations for heavy manufacturing uses are near the port and in the big basin north of Pine Lake and east of the slopes above East 2nd Street north to Lake Herman Road. Relatively large, flat sites exist or can feasibly be prepared in these areas. In addition, separate access for trucks (Industrial Park interchange with Highway 680), rail (Southern Pacific Main Line and one-day switching service) and ships (Benicia deep-water port). In these areas the slope of land is generally gradual enough to permit easy truck access (up to about 15 percent slope) and rail access (up to about 6 percent slope).

Benicia's port presently handles some 25 percent of the tonnage credited to Carquinez Strait ports. The port-related uses, extending from Army Point to East 5th Street, are buffered from surrounding community uses at the western edge. The proposed buffer would consist of the marina facilities, the small hill behind the sewage treatment plant and a proposed strip of trees along the industrial park boundary extending up to about L Street.

The port facility consists of the 2400 foot long pier, rated at over 1000 pounds per square foot load capacity, capable of accommodating three large ships at any one time. Dockside water depth is approximately 38 feet.

MAJOR INDUSTRIAL EMPLOYERS

Manufacturing

Automatic Plastic Molding (Plastic Custom Molding)
Benicia Manufacturing Company (Automobile Parts)
E-T Industries (Aluminum Automobile Wheels)
Exxon Company, USA (Petroleum Refining)
International Manufacturing Company (Swimming Pool Equipment)
Berwind Railway Services Company (Railcar Cleaning and Repair)

Non-Manufacturing

Ace Hardware Company (Wholesale Hardware Warehouse)
Benicia Import Auto Service (Auto Import Processing)
Loomis-Smith Inc. (Security Service)
J.C. Penney Company, Inc. (Distribution Warehouse)
Shortstop (Distribution Warehouse)
Sperry Rand (Engineering and Drafting)

Public and Quasi-Public Utilities, Facilities and Services

Planning Context. A number of the land uses in Benicia are there because they provide support for the residents and businesses in the community. There are basic utilities such as water, sewer and power, basic facilities such as local government and schools, and basic services such as police and fire. This land use category typically includes the types of activities and facilities which are generally recognized to be more efficiently provided by a public or quasi-public agency than by individuals. In general, most service levels are determined by the amount taxpayers are willing to pay. However, certain minimum levels of water quality, sewage treatment and power are prescribed by state and federal guidelines; and, there are ratios of personnel to total population for police and fire service which are desirable goals to achieve.

Public Facilities

City Administration. Benicia's government is housed in an attractive complex of buildings which is sited directly on the East 2nd Street axis as one enters the downtown from Highway 780. Administrative offices and police facilities are both housed at this central location at East L and East 2nd Streets. It is anticipated that the present City Hall buildings will be adequate to house Benicia's government for the foreseeable future. Closure of East K Street between the City Hall buildings and Benicia's Community Swimming Pool and Youth Center Complex would allow expansion of City Hall should the need arise. This would also permit additional off-street parking and allow the creation of a stronger pedestrian link among all of these public facilities.

Benicia's government is the Council-Manager form. A five member City Council, including the Mayor, is elected by the Benicia citizens. The City Council sets official City policy. A seven member Planning Commission administers planning activities and makes recommendations to the City Council.

The maintenance of public facilities and roads is undertaken by the public works staff. The City's principal corporation yard where maintenance equipment is stored and maintained is on East 2nd Street just north of Hillcrest Avenue.

Other Governmental Units. A small corporation yard for equipment used by the state for roadway maintenance is located within the freeway cloverleaf at the East 2nd Street interchange with Highway 780.

At the end of East 5th Street a small coast guard facility maintains a pier and communications center.

The Army National Guard 349th S and S Company is located in the Armory at the east end of Hillcrest Avenue.

Public and Private Schools

Benicia is served by the Benicia Unified School District whose jurisdiction includes all of Benicia, part of the Glen Cove area to the east and the Cordelia area to the north. New development in the Glen Cove area which has been served by Benicia will switch to the Vallejo system in the next year. Within the Benicia City Limits are three public and one private elementary schools, one public and one private intermediate school, one public high school and one continuation high school. Enrollment figures for each of these facilities is as follows:

SCHOOL	GRADE LEVEL	ENROLLMENT 1978-79	CAPACITY* 1978-79
<u>Public Schools</u>			
Semple Elementary	K-5	357	475
Mills Elementary	K-5	306	350
Mary Farmar Elementary	K-5	465	475
Benicia Middle School	6-8	647	690
Benicia High School	9-12	795	1000
<u>Private Schools</u>			
St. Dominic's	1-8	312	

* Capacity can vary according to the distribution of portable classroom facilities among the various campuses. In addition, as new construction is completed these figures must be revised.

At the present time the estimated demand upon school facilities can be projected using a factor of about 0.9 school aged students per new dwelling unit. However, with any change in average family size these rules of thumb can change. The distribution among different grade levels at present appears to be 0.35 to elementary, 0.25 to middle school and 0.30 to high school.

According to recent (1979) surveys done by the School District, the present rate of building activity is contributing new students to

the system at the rate of about 65 new K-5 students, 40 new middle school students and 55 new high school students per year. This is predicated upon a construction rate of between 200 and 300 units per year.

Elementary Schools. Using the gross projections above, it appears there will be a need for a new elementary school or substantially increased capacity at existing sites by 1985 and again by 1990. In 1979 dollars each core facility, capable of accomodating about 300 students, costs approximately \$2.5 million when site acquisition, site improvement (grading) and building construction is added together. With the passage of Proposition 13 in California, school districts can no longer rely on bond money for purchase or lease of facilities. The Benicia Unified School District is presently using money from the City's residential impact fee fund to acquire relocatable classrooms for existing sites. However, new funding sources must be found for major construction. The Southampton Company, major developer of new homes in the hill area, has dedicated school sites as new development areas are approved by the City.

General locations for future elementary school sites are indicated in the land use map for the Upland Planning Area. The suggested sites are intended to strengthen the identity of future residential neighborhoods and are centrally located to residential development. Locations are also suggested so that each will be connected to the proposed citywide trail system linking hill area neighborhoods with the shoreline. To the extent possible the precise location should be made where land is relatively flat so that site improvement costs can be minimized.

Middle and High Schools. The new middle school on Southampton Road is expected to absorb projected enrollment well into the future, thus the development of a second campus is not presently proposed by the School District. Rather than spending money for a new site, the District favors expanding the capacity as needed at the existing middle school by using relocatable classrooms. A general location for a new middle school is indicated in the General Plan Land Use Map and should not be abandoned at the present time.

The High School capacity is expected to be increased in the near future by the construction of a performing arts complex which will have classroom and assembly space. The capacity could be expanded to some 1500 students if this is done. In any event, the high school capacity must be increased beyond its present capacity in order to accomodate the projected demand in 1985. Due to the size of the high school site (approximately 40 acres) and the possibility of expanding the present facility here or onto part of the adjacent Mary Farmer School property (approximately 30 acres), only one high school is needed in Benicia at least until such time as land in the present City Limits is developed. No future site is proposed.

Other Public and Quasi-Public Facilities

Senior Citizen's Center. Benicia's Senior Citizen's Center has been established in a former engineering office at the northwest corner of East L and East 2nd Streets, adjacent to the Civic Center. This structure is now owned by the City of Benicia. There is parking at the site and room for expansion if needed. In 1976, the building was expanded by some 30 percent.

Cultural Facilities. As Benicia grows there will be a need for additional meeting places for community and private activities. Existing and new residents will want to get involved in community affairs and, as the population grows, the range of activities and the need for meeting places will expand. Most of the activity organization and provision of facilities must be privately sponsored, however, the City can play an important role in encouraging developers to include suitable meeting places, sidewalk cafes and small theatres in their proposals.

Existing public meeting places include the Veteran's Hall on First Street, the Youth Center on K Street and various school facilities. A public library exists on G Street near First Street. A principal private cultural group is the Benicia Old Town Group Theater on West J Street near First Street.

Public and Quasi-Public Services

Safety Services. Benicia has its own fire and police departments. The police department is responsible for all areas within the City Limits and, under joint agreement with surrounding jurisdictions, provides first response service to Sky Valley and the area towards Cordelia within the City's Sphere of Influence. The department shares responsibility for policing the Benicia Industrial Park with private guards employed within the industrial complex and by individual industries in the park. The Benicia Police Department has its central headquarters adjacent to City Hall and does not plan any district offices. As the population of Benicia grows additional personnel will have to be added to the police force. Criteria for personnel expansion involves adding one new beat consisting of at least five sworn men, one clerical support person, and an additional automobile for each 3000 to 5000 new residents. According to population projections, about four additional beats will have to be added by the year 2000.

Benicia's Fire Department, consisting of the main station in Central Park and a branch station on Panorama Drive in Southamptn, is responsible for all areas within the City Limits and, under joint agreements with surrounding jurisdictions, provides first response

to Sky Valley and other nearby areas outside of the City. The old branch station on Grant Street in the industrial park, was abandoned in 1979, in order to have more up-to-date quarters and to place units closer to the newer hill area development to improve response time. The new branch is considered temporary and a new facility is expected in the future somewhere along Solano Drive. As the industrial park continues to fill out, the Department also anticipates placing a branch at the northern end of the industrial park. The Exxon refinery employs a specially trained fire fighting unit for additional safety.

The Fire Department's minimum service requires that three firemen be on duty at each station for each of three shifts. Each shift actually requires four people since there is a rotation for time off, vacation and illness to insure that a minimum force is available. Additional personnel and equipment will have to be added to staff future branch stations or to upgrade service from existing stations.

Health Services. Both the police and fire departments provide emergency first aid and rescue service. There is some overlap in this area at present however, the fire department, with its rescue rigs and boat can provide rescue service to most areas within the City Limits while the police department, given the responsibility of operating a central communications center, should be best equipped to coordinate all rescue and emergency activities in the event of a citywide disaster.

At present there are physicians practicing in Benicia but there are no hospitals. An ambulance service is provided in Benicia or Vallejo and all hospitals are in Vallejo or across the Carquinez Strait in northern Contra Costa County. The normal destination for emergency cases is to either Vallejo General or Kaiser Hospitals in Vallejo while the Broadway Hospital in Vallejo is generally suited to non-emergency services. Benicia's present and future projected population is not sufficient to support a community hospital however, small medical facilities should be encouraged to better serve the community. Should a hospital be contemplated for Benicia, it should be located with good access to the freeway and should be near the geographic center of the community. Zoning for a hospital should be provided only when such a facility is seriously considered and imminent. Small medical facilities should be located near the First Street core area.

Neighborhood Service Centers. One of the most time-consuming and frustrating problems for poor persons is the search for social and economic services which are scattered throughout the community. Although Benicia is relatively small at present, the concept of the neighborhood service center, where a number of services can be housed in one location, should be pursued as the community grows and services are generated in the future. One example of a social service now provided in the community is the continuation high school. Examples of services which may be generated in the future are listed

in the table below:

- . Alcohol or drug abuse counseling
- . Handicapped job training or special library for blind or deaf
- . Consumer protection
- . Tax preparation and forms
- . Election information
- . General Health Clinic
- . Emergency food and information
- . Emergency housing and information
- . Employment information
- . Information about community attractions and events

Some of the above services are provided by the Chamber of Commerce and by special organizations and city commissions. Duplication should not occur.

Public and Recreational Transit Services. The City of Benicia subsidizes the Benicia-Vallejo Stageline bus service which makes six round trips between Benicia and Vallejo each day. The route leaves Solano Square following West K and J Streets and returns to Solano Square along the freeway. One stop is made at the recreation club in Southamptton. In Vallejo, the route passes the major hospitals and makes a connection with the Greyhound bus station. Cost (1979) is 50 cents one way. The City also subsidizes a dial-a-ride cab service in Benicia. Future improvements to the bus system could be made by expanding the inner-city route to take in passengers east of Solano Square and to include a link across the George Miller Memorial Bridge to the Pleasant Hill BART station and Martinez AMTRAK station.

When the Benicia Marina area is developed and the amount of visitors to the foot of First Street increases, a weekend recreational ferry service between Benicia and the historic town of Port Costa in along the northern shores of Contra Costa County is recommended. The City should encourage this to be operated by private enterprise operating from the Benicia Marina.

Marsh Interpretive Center. The periphery of Suisun Bay comprises a major marsh preserve containing a variety of marsh plants and wildlife forms. An opportunity exists for Benicia to develop a small interpretive center in conjunction with the existing scenic overlook on the northwest corner of the Lake Herman Road interchange with Highway 780. Such a center could consist of permanent displays of descriptive material to inform people of the contents and value of the marsh preserve. The scenic overlook permits a view of the marsh, the water area of Suisun Bay and the 'mothball fleet' of retired naval vessels.

Public Utilities

Sewage Treatment. Benicia's sewer system is an old one dating from the time when sanitary sewers and storm drains flowed together into the Carquinez Strait. Separation of sanitary from storm water flows has been completed and interceptors constructed to carry waste water to the treatment plant at the lower end of East 5th Street. The plant is currently (1979) being upgraded from primary to secondary treatment capability to satisfy state and federal mandated water quality standards. The current dry weather flow to the plant is approximately 1.5 to 2.0 million gallons per day while the plant has a nominal capacity of 3.0 million gallons per day. The plant can accomodate up to about 12.0 million gallons per day wet weather flow. Analysis of plant capability indicates that residential waste water does not cause operational problems but that additional source controls should be implemented to minimize the effects of industrial customers. Heavy metals from some industrial processes can damage the bacteria that are necessary to the digestion process which typically is basic to the treatment of waste water. To meet water quality standards, 85 percent of unoxidized wastes must be removed from the waste water before disposal through the outfall line into the Carquinez Strait. The solids, or sludge, is disposed of separately at the chemical dump north of Benicia.

A separate waste treatment plant is owned and operated by Exxon in the industrial park. The plant is located beneath the viaduct near Bayshore Road.

The Benicia General Plan recommends screening the Treatment Plant from abutting homes by landscaping, and providing landscape and design treatment on the west facing part of the Plant facing the Benicia Marina.

Water Supply. Benicia has a long history of having a local shortage of fresh water. Springs were barely adequate for even the first settlers. When the Benicia Water Company was set up in 1880 to bring water from a dam on Sulphur Spring in Sky Valley to Benicia, they found the sulphur content in the water to be objectionable. While the Sulphur Springs water, which is contained by Lake Herman, can be treated and mixed with other water for satisfactory domestic use, the source still contains a high level of dissolved minerals which, if used directly in industrial wash processes, causes machinery to foul. Water was commonly brought to Benicia by barge during dry years.

Lake Herman was constructed in 1905 and today provides a relatively constant but small supply of 1.25 million gallons per day. A supply of 100 million gallons is stored behind the dam most of the year although for several months after rains, the amount increases to about 400 million gallons. The total capacity is estimated to be about 610 million gallons.

The great majority of Benicia's water supply is currently supplied by the Solano County Flood Control and Water Conservation District from the Solano Project which consists of Monticello Dam, Lake Berryessa and the Putah South Canal. The City's Water Treatment Plant is located on Lake Herman Road outside the City Limits and was completed in 1971. A 36 inch diameter pipe brings fresh water from the Cordelia area along Highway 680 to the Plant. The Water Treatment Plant is capable of producing a steady supply of 4.0 million gallons per day (MGD) and an accelerated rate of 8.0 MGD for short periods provided State Health Department standards are not exceeded. The existing average daily demand is below the production level while the maximum is estimated to be 4.99 MGD. Maximum daily demand is a conservative estimate which, for business and commercial properties can be as much as three times the average demand. If maximum demand is made, production can be increased or reserves from storage facilities can be taken. The City currently (1979) has an allocation of 10.7 MGD from the Solano Project and additional entitlement reserved from the proposed North Bay Aqueduct. Negotiations are continuing to increase the Solano Project allocation until the North Bay water is available.

Based on future population projections of approximately 25,000 population by the year 2000, Benicia will need to meet a demand of some 19 MGD to meet maximum daily demand. In addition to the water entitlement, Benicia must increase the treatment plant capacity and must provide for additional storage facilities in the community particularly for the Uplands Planning Area. Fortunately, the original water plant was designed with provision for expansion. As future storage and supply facilities are designed, care should be taken to see that individual trunk lines are sized to accommodate the densities shown in the General Plan and not to provide unnecessary excess capacity which might stimulate growth where it is not desirable.

The City of Benicia Master Water Plan, prepared jointly by Schwafel Engineers and Water Resources Engineers, in 1977, provides a detailed outline of improvements to the existing distribution system which are being implemented at present. Of particular importance is the provision of adequate emergency flows for fire protection purposes. Areas in need of improvement are identified in the Safety Element.

Power and Energy Use. Benicia's principal sources of power are from natural gas and electricity supplied by the Pacific Gas and Electric Company. The regional supply system which feeds Benicia is a closed loop system, thus any interruption of any single trunk line would not result in a complete blackout. Electrical power from the regional system at 230 kilovolts (23,000 KV) is stepped down for distribution to industries and residences at the Bahia Substation in the Benicia Industrial Park. No reliable estimate of future demand for power is possible due to variables of energy availability

and the effects of the economy on new construction. No immediate limitations on supply capability are forecast.

Various figures are available for estimating the average use of energy for residential projects. However, much larger quantities of energy are used by various industries in manufacturing processes and by businesses in heating and lighting. Estimates of energy use should be prepared for the environmental assessment of specific projects and ways sought to minimize consumption wherever possible. The following approaches to energy use minimization are suggested:

- . Maximize the north-south orientation of homes in order to take advantage of solar energy; as solar information becomes more readily available and understood by the general public, require use of solar equipment for preheating of water and for space heating and cooling.
- . Maximize the use of proper insulation in construction of buildings to be used for habitable purposes so that heat does not escape from the inside during cold seasons and so heat doesn't penetrate to the interior during hot seasons.
- . design office buildings to have operable windows for natural air conditioning rather than relying on artificial means.
- . Utilize fluorescent and other lower cost means of illumination to minimize the cost of lighting.
- . Utilize good quality space heaters to minimize energy lost through exhaust. Combine heating with heat pumps to make furnaces more efficient.
- . Utilize landscaping and roof overhangs to cut heat gain through window areas to spaces where users will probably want to employ air-conditioners or air coolers.

Utility Undergrounding. In all new construction, power lines and telephone lines should be placed underground.

Telephone and Communications. Telephone communication is provided by Pacific Telephone to Benicia. Cablevision, Inc. provides a television cable for subscribers in Benicia.

Storm Drain Facilities. All storm water runoff flows through natural creekbeds and drainageways to the Carquinez Strait and Suisun Bay or through culverts and installed pipe by gravity to these disposal points. Areas with flooding potential are discussed in the Seismic Safety Element and the effects of runoff on marsh and water quality are discussed in the Open Space and Conservation Elements.



PROPOSED MARSH
INTERPRETIVE CENTER ★

WATER
PLANT

SPECIFIC LOCATION
UNDETERMINED

APPROXIMATE LIMIT OF SEWER
AND WATER SERVICE - 1979

SPECIFIC LOCATION
UNDETERMINED

★ PRIVATE (EXXON) WATER
TREATMENT PLANT

★ CITY CORPORATION
YARD

★ ARMORY

Pine Lake

★ PROPOSED MUSEUM

★ SENIOR CITIZENS CENTER

★ POLICE

★ CITY HALL

★ YOUTH
CENTER

★ POST OFFICE

★ BENICIA CAPITOL
LIBRARY

★ WASTE WATER
TREATMENT PLANT

EXISTING

PROPOSED



SCHOOLS

FIRE STATIONS

0 2000 4000
SCALE IN FEET

NORTH

BENICIA GENERAL PLAN

PUBLIC
FACILITIES



Historic Emphasis

Historic Summary. Benicia was founded more than a century ago, in 1847, by Dr. Robert Semple, editor of California's first newspaper, The Californian, and by Thomas Larkin, United States Consul to Alta California. Land for the new town was part of Rancho Soscol secured from the Mexican General, Mariano Vallejo. The settlement was named in honor of Vallejo's wife, Benicia. Being one of the first cities in the San Francisco Bay Area, Benicia can be proud of its interesting heritage. The layout of lots and streets was made with little regard to topography. Jasper O'Farrell, who also laid out the street pattern in San Francisco, superimposed a uniform grid of broad boulevards extending into the hills and beyond the shoreline into the water itself. First Street was the focus of the original community and most of the earliest development in Benicia occurred here near the original port. Benicia was an important stop along the way to California's gold fields; the first public leak of the gold discovery at Sutter's Mill was made by a courier on his way to an assay office. Benicia attracted St. Paul's, the First Episcopal church in California, and even served briefly as California's State Capitol in 1853-54. A second important sector of Benicia's history relates to the founding of the U.S. Army Arsenal in 1849. A number of historic structures remain from the years prior to 1964 when the Arsenal lands were abandoned by the Army and taken over by Benicia Industries.

Planning Context. In order to emphasize the importance of Benicia's historic setting, two distinct historic districts have been identified and an historic route suggested which would link the two districts and take motorists, bicyclists or pedestrians past most of the key historic structures and places in Benicia. The two major districts are: 1) The historic downtown; and, 2) the Arsenal.

Downtown Historic District. Properties along both sides of First Street from Solano Square to the waterfront, and for some blocks to the east and west of First Street, should be part of a downtown historic district. This district would recognize the interesting mix of uses which has resulted over the years and would be protected by a design review procedure applied to remodelling projects, new buildings and signs in the district to insure that the historic quality is preserved. An historic flavor should be carried through into the waterfront-commercial shops and offices as they are built up around the marina. In the historic district, the adaptation of new uses to historic structures should be promoted as a means of retaining the original character.

In some instances it may be necessary to replace older buildings with new facilities in the core commercial area. To permit saving those buildings which are structurally sound, the City should investigate vacant sites where such buildings might be relocated. The concept of an historic park or commons has successfully been

implemented in other communities for residential, office, commercial or mixed uses. In Benicia, such an historic common could accomodate both residential and appropriate commercial uses.

Arsenal Park. A number of historic structures, originally built to serve the Army Arsenal, still stand within Benicia's industrial area. Some of the more notable are the Arsenal Headquarter's building which now serves as the Industrial Park headquarters, the Commandant's House, which has been converted to a fine restaurant, and a number of stone structures which served such uses as Guard House, Clock Tower Fortress, Camel Barns and Powder Magazine.

The Arsenal historic district should be recognized by the creation of a park comprised of the stone Clock Tower Fortress and elegant Commandant's House overlooking the maritime activities of Benicia's Port. The historic park should be limited to those lands presently in City ownership and control. Other historic buildings and places in the lands once belonging to the Arsenal should, however, be preserved. In the vicinity of the headquarters building new structures and uses should be blended with historic structures and maximum effort given to proper rehabilitation and reuse of the old stone and brick storage buildings. The Post Cemetery, Post Hospital, Camel Barns and Powder Magazine should not be part of the Arsenal Park but should be restored, maintained and accessible for people to see.

Officially Recognized Historic Landmarks. Many of the historic buildings and places in Benicia have been placed on Federal and State Registers. Others are recognized in the California History Plan, the California Inventory of Historic Places and as local places of importance. Major landmarks are listed below:

Federal Register

Benicia Capitol-Courthouse
Old Masonic Hall
Benicia Arsenal and Barracks

State Historical Landmarks

Benicia Capitol (25)
Benicia Masonic Hall (18)
First Protestant Church
Benicia Arsenal
Benicia Barracks
Benicia Seminary
St. Paul's Episcopal Church (19)
Fischer-Hanlon House (26)

California Inventory of Historic Places (Additional Sites Only)

California Hotel Site
Crooks Mansion (C)
Harriet Fish House
Jurgensen Saloon (33)
Pacific Mail Steamship Company Building
Powder Magazine (5)
Southern Pacific Depot (36)
St. Catherine's Academy Site
Von Pfister House
Captain John Walsh House (15)

California History Plan (Additional Sites Only)

Commandant's House (3)
Arsenal Administration Building (A)

Other Points of Historic or Local Interest

Camel Barns (B)	St. Dominic's (11)
Crooks Mansion (C)	Salt Box House (29)
Military Cemetery (D)	
Chamber of Commerce (G)	
Post Hospital (H)	
Arsenal Guard House (E)	

A more detailed inventory of locally important sites, including more remote sites, can be obtained in a booklet available from the Benicia Chamber of Commerce. This Benicia Tour Guide also includes a description and brief history about each of the included sites.

Historic Route. The Historic Emphasis Map, Map 6, includes a travel route capable of linking the downtown historic district with the Arsenal Park. Some of the major historic landmarks and points of interest near the route are identified. The numbers on the map are the same as those in the Chamber of Commerce Guide. The letters on the map have been arbitrarily assigned to other points of interest. The numbers and letters shown on the map are included in parenthesis following each of the pertinent landmarks in the lists above. Many of the identified sites have plaques posted as a result of their being listed by official agencies.

Historic Museum. Each year many thousands are exposed to the Benicia State Capitol Building, the Clock Tower Fortress, the old churches and other sites of historic interest. Many people return frequently to the downtown antique stores and to Benicia's annual Peddler's Fair in August. Despite a small museum in the State Capitol, Benicia has no place to exhibit photographs, historic accounts and other documents of the City's past. Consideration should be given to

locating such a museum in the Clock Tower Fortress.



- CENTRAL HISTORIC DISTRICT
- CONCENTRATION of HISTORIC ARSENAL BUILDINGS
- HISTORIC ROUTE
- 38 LANDMARK SITE

0 2000 8000
SCALE IN FEET NORTH

The Use of Buffers for Land Use Compatibility

The purpose of this section is to list examples of appropriate land uses in buffer zones separating divergent land use types. In particular, this section should be referenced when dealing with areas between residential and industrial or heavy commercial land uses.

As a general rule, care should be taken to avoid placing uses next to residential areas which will attract a lot of traffic through local residential streets. Sufficient off-street parking should be provided to minimize congestion and maintain on-street spaces for visitors to residences. Where industrial uses may be placed in close proximity to residential uses, even with the use of a buffer care should be taken to avoid industrial uses which involve hammering, punching or similar processes that are noisy or generate vibrations. Those which require frequent truck deliveries should also be avoided as should uses which may cause electrical disturbance, dust or smoke affecting nearby residences.

Open Space Uses Used as Buffers. The following open space uses should form a continuous band where used as a buffer but can be of varying widths depending on topography and types of uses to be separated:

- A. Where terrain is rugged or if land is ecologically important:
 - Natural Open Space
- B. Where development is inappropriate:
 - Parks or playgrounds
 - Golf Courses

Residential Uses Used as Buffers. Residential uses of varying densities can provide effective buffers.

- A. Where the separation is between low and high density residential:
 - Medium Density residential
- B. Where the separation is between high density residential and open space:
 - low and very low density residential

Non-Residential Uses. The following non-residential uses provide a open space separation but permit economic use of land and can usually result in an appropriate buffer between residential and industrial or heavy commercial land uses:

- Plant Nurseries
- Crop and Tree Farming

Buffers between Low Density Residential and General Commercial Uses.
The following types of uses should be considered for buffers:

- Professional Offices
- Medium Density Residential
- Open Space Uses

Industrial Uses Used in Buffer Zones. The following industry type uses are usually compatible with residential uses when developed in conjunction with dense planting along the boundary line between the uses and when design attention is given to the appearance of the industrial buildings and accessory storage yards:

- Administration Offices
- Corporation Yards
- Light Manufacturing Activities Using Prepared Materials
Such As: cork, fabrics, feathers, paper, plastics, rubber and wood.
- Light Manufacturing Activities Using the Following Products:
beverages, food, business machines, ceramics, clothing, electrical appliances, artist's materials, pharmaceuticals, sporting goods, furniture and photographic film.
- Sign Making
- Printing and Publishing
- Storage Facilities (low demand inventory, business records, public mini-storage).

Recreational Land Use

The purpose and intent of this section is to establish criteria for park development and distribution, to inventory existing park and recreational facilities and to recommend future facilities.

Planning Context. Factors used in the determination of which land may be most appropriately set aside for park and recreation purposes are as follows:

1. Land which preserves natural resources.
2. Land which permits adequate outdoor recreation.
 - a. Urban areas of historic importance should be set aside.
 - b. Recreation areas having water-orientation should be provided.
 - c. A wide variety of recreational activities for both the residential and employment communities should be provided.
3. Land which helps structure urban development.
 - a. Land forms which serve as gateways or delineate boundaries to the City should be utilized for park and recreation purposes.
 - b. Open space corridors which serve to connect open space activities should be provided.

The Existing Park System

Park Land Distribution. Historically, the distribution of park lands has resulted in a concentration around the City Hall complex. The Duncan Graham and Willow Glen Parks have been developed recently. Many open space voids, potentially viable as park sites, have been set aside as the Southampton area has been developed.

Amount of Park Land. Park and recreation standards used in park analysis suggest that approximately 10 acres of park land be dedicated for each 1000 population. Including the 1100 acre Lake Herman property, the City presently has some 1300 acres of dedicated park land compared to a population of approximately 13,000.

Major Recreational Uses. The City of Benicia enjoys an active recreational program with baseball being the most popular activity. Other popular uses include picnicking, tennis, crafts, swimming and informal play. Recreational use of park facilities is uneven; baseball is concentrated at Sanborn, Fitzgerald and at the Little League fields, for instance, while a more varied distribution has been provided for at the recently developed Willow Glen and Francesca Terrace Parks. In the future, as the character of the City evolves and specific ethnic and age groups are identified, the orientation of various facilities should be reconsidered in order to better serve the community.

Park Development Criterion

Distance Criterion. The following standards can be used as a general means of achieving an even distribution of park lands:

Type of Park	Distance of Park from Commercial or Industrial Employment Area	Distance of Park from Residential Concentrations (1000 People)	Size in Acres
Neighborhood Park	1/8 mile	1/4 mile	2 -5
Neighborhood Park in Conjunction With a School	N.A.	1/2 mile	5 +

Basic Ratio of Park Area to Population. Using the national standard of 10 acres per 1000 population, Benicia should seek to provide the following total park acreages in the future:

Year	Population	Minimum Park Acreage
1975	10,754	107.54
1980	14,000	140.00
2000	24,000	240.00

Specific Ratio of Park Area to Population. Based on an average family size of 3.4 persons per dwelling unit, typical of some of the newer development in the Southampton area, the following specific standards for different park types are recommended.

Population	Playground Facilities (acres)	Neighborhood Park (acres)	Playfield (acres)	Community Park (acres)	Total (acres)
12,000	17	24	19	42	102
15,000	21	30	23	55	129
20,000	28	40	30	70	169
30,000	42	60	45	105	252

Park Physiography. The prevailing topography in Benicia has resulted in there being numerous opportunities for relatively 'level' sites in Central Benicia but mostly 'sloped' sites in the Southampton and Hillcrest areas; more 'level' sites for organized activities are needed.

Existing Park Land Distribution

City Park. City Park, consisting of 3.4 acres, is bounded by Military West, First Street, 2nd Street and K Street. Across Military West is the Solano Square Shopping Center, across West 2nd are single family residences, across K are mixed multi-family and commercial uses and across First is the City Hall complex.

Due to its central location near the downtown and on the major axis through the downtown, this park will probably continue to be a gathering place for young persons and may even increase in this role as the marina area is more fully developed. It is expected that an increasing number of out-of-town visitors will use the park in the future especially on weekends. The park's central location offers an opportunity for it to provide recreational activities for both residential and commercial areas.

Eunice Jensen Park. This small park, consisting of 1.3 acres, is primarily a visual element marking the entrance to Central Benicia at East 2nd Street. The park is landscaped with a fountain, shrubs and lawn area. No formal recreation activity is provided. Within the park is the Senior Citizen's Complex. This building is ideally situated but its poor architectural appearance detracts from the park. Consideration should be given in the future to redesigning the building and its site plan.

Civic Center Park. This park, consisting of 2.7 acres, is adjacent to City Hall and bounded by K Street, the Veteran's Building and L Street. Park facilities include two tennis courts, a basketball court, a children's play area and barbeque sites. The City's Youth Center and Community Swimming Facility are across K Street while land uses on the other sides are primarily single family residential. The tennis courts and barbeque facilities appear to attract people from other parts of the community thus the park's use is not strictly by surrounding residents. Consideration should be given to adding passive recreational activities such as lawn bowling and gardening to the facilities presently available in this park.

Swimming Pool and Youth Center. These facilities, consisting of 2.0 acres are bounded by East 2nd Street, J Street and K Street. The City owned swimming pool is suitable for competitive swimming events and gets considerable use. The adjacent youth center houses indoor games including basketball and volleyball and rooms suitable for pool tables, crafts and judo lessons. These facilities are near enough to the City Park, which already serves as a natural gathering point for young people, to provide a choice between structured or unstructured activities. This logical linkage could be strengthened by the partial closure of K Street to automobile traffic.

Willow Glen Park. This park, consisting of 2.7 acres, is bounded by K Street to the south, West 7th Street to the east, a small commercial center and Military West to the north and by single family residences to the west. All of the surrounding uses in the area are single family homes. The main focus of the park is the small, wooded portion of Willow Creek with pleasant riparian vegetation. Landscaping consists of mounded grassy knolls which provide some seclusion from the surrounding streets and are used for picnicking on lunch hours and weekends. The park includes a children's play area, sitting areas, picnic areas and informal play areas.

Sanborn Fields. This 2.8 acre park is used primarily for major baseball games. It is located directly east of the City Hall complex and is bounded by K Street, East 3rd Street and L Street. It is the only City park that could accomodate a regulation football field. Consideration should be given to repairing the existing bleacher facilities which are badly deteriorated.

Little League and Fitzgerald Fields. These two baseball fields, consisting of 2.1 and 3.5 acres accordingly, facilitate the City's Little League Baseball programs. No change in use is recommended however a reevaluation should be made when and if similar facilities are provided elsewhere in the future. The location, at East 2nd Street and H Street is near the First Street core area.

Duncan Graham Park. This neighborhood park, consisting of 1.5 acres, serves the single family residents living in the surrounding area. The park consists of a large lawn area with a children's play area. The park is highly used. Consideration should be given to upgrading the quality and variety of play equipment available.

Fourth Street Tot Lot. This waterfront park, measuring only 20 feet by 60 feet, was improved as a 'Y-Wives' project. The park offers a pleasant view of the Carquinez Strait and contains a variety of things for children to climb on or through as well as a sitting area. No improvements or changes are recommended.

Southampton Open Space. Approximately 83.5 acres (1977) of open space, consisting primarily of steep hillsides unsuitable for park development are scattered through the Southampton area. Some recreational facilities have been abandoned for lack of interest. A community swimming pool complex (quasi-owned) and informal baseball fields have been enjoyed. A park questionnaire, sent to Southampton residents in April, 1976, was returned indicating the most desireable facilities to be playgrounds for small children, tennis courts and baseball fields. Future development plans in the Southampton area should be reviewed to see that useable park lands will be included and that desired facilities are built.

Future Park Development

Overall Findings and Conclusions Regarding Park and Recreation Facilities

Joint Use Agreement. A joint use agreement between the City of Benicia and the Benicia Unified School District exists which provides for the sharing of facilities to promote and satisfy particular recreational programs such as indoor sports and crafts. Consideration should be given to expanding this policy in the future to include the consolidation of park and school lands so that outdoor use areas are larger and may be more efficiently used. In this manner, site acquisition and development costs could be minimized. In planning future school sites, particular emphasis should be placed on consolidating school and park facilities to make the space useable but to minimize potential conflicts such as school vandalism.

Park Site Evaluation. The Master Parks Plan and Recreation Study prepared by Terra Firma Associates for the City of Benicia in 1977, resulted in the following evaluation of park and recreation areas:

Lake Herman Park. The physiography of the City owned land surrounding Lake Herman, and the fact that single family residential development is now bringing residents into the vicinity of this amenity, suggests that a variety of active and passive recreational uses should be considered. The area is large enough that overnight camping, freshwater boating, picnicking, playfields and even golf course facilities could be accommodated.

The site, some 630 acres within the City Limits, is recommended for improvement as a community park in the General Plan, however, if, and when the area is improved the range of facilities will undoubtedly attract people other than just Benicia residents. Therefore, restrictions to exclude all but Benicia residents should not be implemented however fees to help support the cost of operating park facilities should be considered. If a golf course is included, the high initial cost will require additional revenue from other City sources.

Waterfront Parks (The Waterfront Plan). The Benicia Waterfront Plan, a Specific Plan and Special Area Plan, are included in the Appendix to the General Plan. These special plans are part of the General Plan and have been adopted to facilitate implementation of the General Plan along the shoreline. These documents describe appropriate development for a range of large parks, long narrow parks, medium sized parks and small street-end parks along the shoreline from the George Miller Memorial Bridge to Benicia State Park. A pedestrian and bicycle system, using the specific park properties and city street rights-of-way, create a complete connection for public use. Development of the McCord Property, to include play areas and picnic areas in addition to the boat ramp at the end of West 9th Street, is seen as a key component to the ultimate improvement of the shoreline.

Southampton Parkland Dedications. The lands typically deeded by the Southampton Company for park purposes have been those too steep for residential development. As a result, the lands are also generally too steep for park development to supply desired facilities (play areas for small children, tennis courts, baseball fields). Of the 83.5 acres designated (1977) roughly 20 acres is suitable for park development to accomodate recreational facilities. These steep areas are important for the sense of open space and the separation between residences they provide, however, these areas do not provide the types of facilities desired by hill area residents as indicated by the response to the special park questionnaire sent to Southampton residents in 1976. To remedy this situation, the City of Benicia should consider amending its parkland dedication ordinance to specify minimum criteria for land to be dedicated. This would provide for the City to require areas suitable to meet the needs of area residents.

A detailed analysis of the various dedicated lands, including application of the park development criteria discussed above, indicates the following recommended improvement approach. The letters identifying various park areas are included on the Park and Recreation Map, Map 7.

IDENTIFICATION REFERENCE LETTER	GENERAL TERRAIN	RECOMMENDED PARK SERVICE LEVEL	RANGE OF PARK USES TO BE CONSIDERED
A	Level	Neighborhood	Softball, Children's Play, Informal Play
B	Level	Neighborhood	Softball, Children's Play, Informal Play
C	Ravine	Neighborhood	Picnic, Children's Play
D	Level	Neighborhood	Softball, Picnic, Play
E	Valley	Neighborhood	Softball, Picnic, Play
F	Level	Neighborhood	Children's Play Areas
G (Exist. Dump)	Canyon	Community	Softball, Tennis Courts, Games, Picnicking, Informal Play Areas
H	Steep	Community	Hiking
I	Steep	Community	Hiking
J	Hilltop	Neighborhood	Scenic Views
K	Ravine	Suggest Combine With School	Outdoor Classroom, Nature Study, Picnicking, Scenic Value
L	Ravine	Community	Nature Study, Picnicking, Scenic Value
O	Steep	Community	Amphitheatre, Softball

The Master Parks Study recommended that the Southampton Company be prepared to dedicate a minimum of 154.9 acres of the total development area (1977) for park land purposes and that the cost of park improvements be shared with the City of Benicia. In particular, the study emphasized the completion of the bicycle and pedestrian trail system linking Benicia State Park with the City's Lake Herman property.

Other Park and Recreation Uses. Several small parks for neighborhood and community use have been identified as listed below:

IDENTIFICATION REFERENCE LETTER	TERRAIN	PARK SERVICE LEVEL	RANGE OF USES TO BE CONSIDERED
M (E. 3rd St.)	Level	Neighborhood	Softball, Play Areas
N (E. 2nd St.)	Level	Neighborhood	Bicycle Path
P (Clock Tower)	Level	Community	Community Center, Museum
Q (E. 5th St.)	Level	Neighborhood	Conversation, Play Areas

Parkland Deficiency. By applying the distance criterion set forth above, several areas of the city are hypothetically deficient in park development potential. Consideration should be given to finding appropriate space for small neighborhood parks in these areas. The Parks Map, Map 7, identifies these areas.

Park Improvement Priorities. The Master Park and Recreation Study of 1977 resulted in the following priority being recommended for park improvements to the year 2000.

Priority 1: Development of Southampton Park (Area C), The Clock Tower (Arsenal Park), the McCord Property (West 9th) and later phases of Willow Glen Park; including recreational uses discussed.

Priority 2: The development of areas A,B,D,E,F and G described above; including the recreational uses discussed.

Priority 3: The completion of the Waterfront Plan park system described in the Waterfront Specific and Special Area Plans including bicycle and pedestrian trails, picnic and play areas.

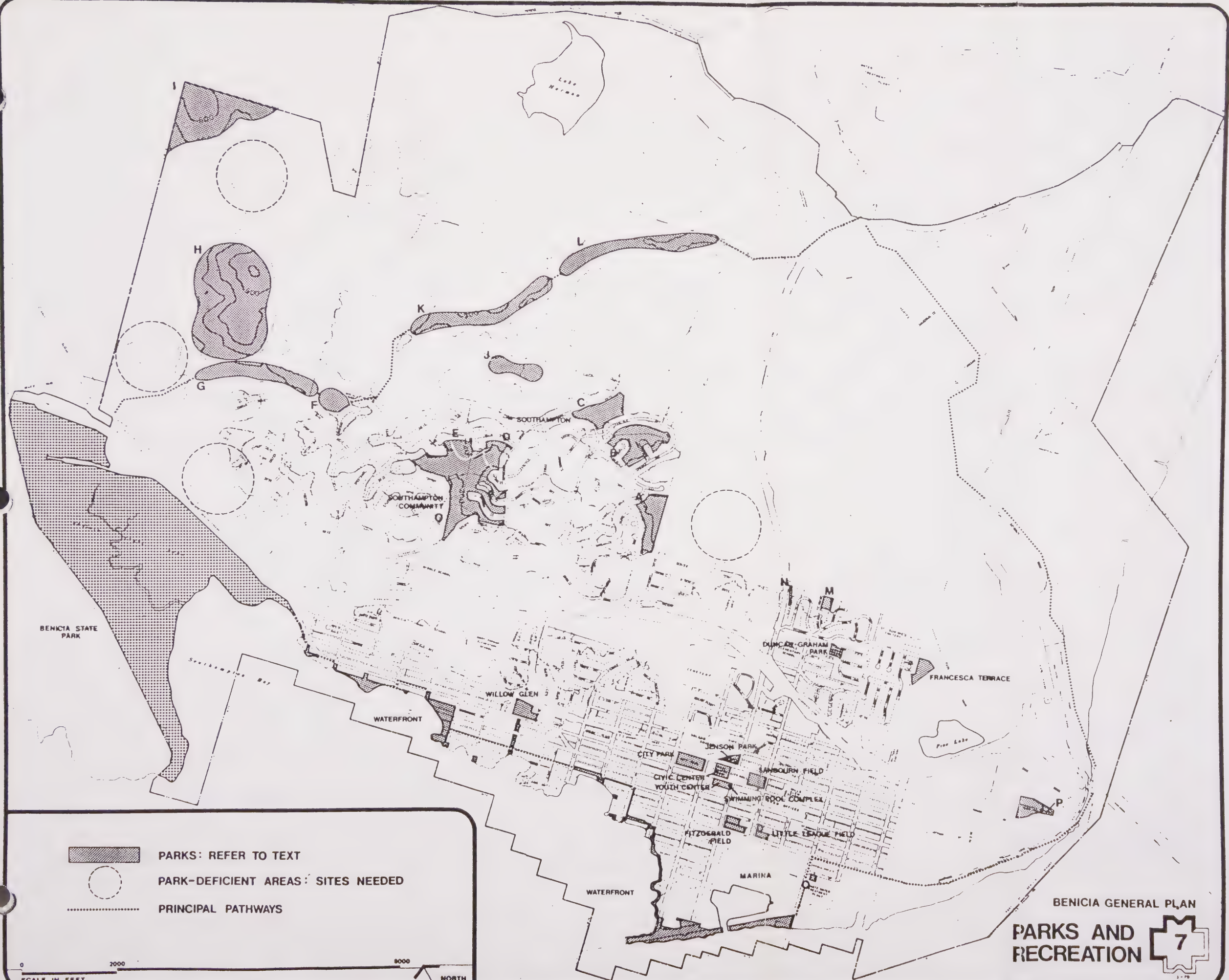
Priority 4: Development of the Southampton Community Park (Area O)

Priority 5: Acquisition of neighborhood park sites in deficient areas.

Priority 6: The development of areas M,N and Q.

Priority 7: The development of Community Park areas H,I,K and L.

Priority 8: The development of the Lake Herman area.



PARKS: REFER TO TEXT

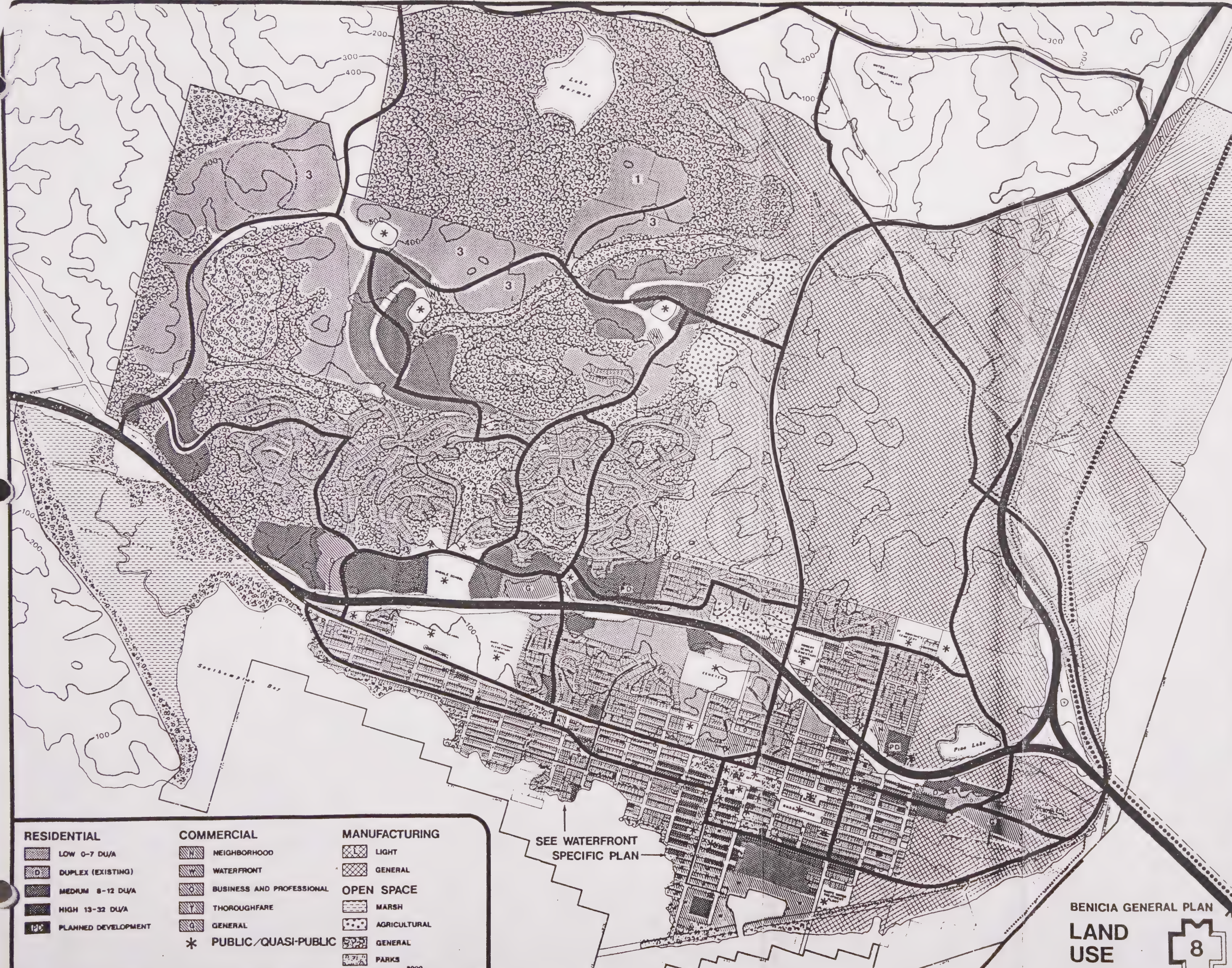


PARK-DEFICIENT AREAS: SITES NEEDED



PRINCIPAL PATHWAYS





RESIDENTIAL

- LOW 0-7 DU/A
- DUPLEX (EXISTING)
- MEDIUM 8-12 DU/A
- HIGH 13-32 DU/A
- PLANNED DEVELOPMENT

COMMERCIAL

- NEIGHBORHOOD
- WATERFRONT
- BUSINESS AND PROFESSIONAL
- THOROUGHFARE
- GENERAL
- * PUBLIC/QUASI-PUBLIC

MANUFACTURING

- LIGHT
- GENERAL
- OPEN SPACE
- MARSH
- AGRICULTURAL
- GENERAL
- PARKS

SEE WATERFRONT
SPECIFIC PLAN

LAND USE POLICIES AND PROGRAMS

Land Use Policies

The following policies are set forth to help guide decision making with regard to land use in Benicia. While the principal element to which each policy relates is the Land Use Element, a cross index to other elements which are also affected is included. Land Use Policies are included on the following few pages.

Land Use Implementation Programs

Although some of the policies are self-explanatory, there are some which require particular programs or even new ordinances to facilitate implementation of the General Plan. This section, therefore, describes the recommended programs for use in implementing the General Plan policies.

LAND USE ELEMENT POLICY STATEMENTS	RELATION TO GENERAL PLAN ELEMENT											
	LAND USE					OTHER ELEMENTS						
	RESIDENTIAL	COMMERCIAL/INDUS.	PUBLIC FACILITIES	RECREATIONAL	HISTORIC	CIRCULATION/ TRANSPORTATION	HOUSING	CONSERVATION/ OPEN SPACE	SEISMIC SAFETY	NOISE	SCENIC HIGHWAYS	COMMUNITY SAFETY
1. Most intensive forms of residential development should be located near First Street, at locations around the City marina east of First Street, and to contain the expansion of convenience commercial development.	■	■										
2. Middle Density Residential development should be used as a buffer between apartments and single family areas.	■											
3. Single Family Detached Residential development should be the predominant residential land use in the Water-Oriented Area to promote the character of a low density, middle income community.	■											
4. Low intensity development should be located in the Upland and Lake Areas to provide a rural residential environment and to retain a sense of rural surroundings for Benicia.	■							■				
5. Multiple residential uses existing prior to July 1, 1977, in areas designated for single family residential use should be considered allowable uses.	■											
6. Buffers identified in the Land Use Element should be used to separate divergent land use types.	■	■	■	■	■			■		■		
7. Open land north of Lake Herman Road should be generally avoided by development in order to preserve rangeland. Some sparse residential uses in the Sky Valley Area may be considered.	■							■				
8. The City should seek the dedication of land or development rights for adequate open space to define future residential development areas and suitable open space for neighborhood park and recreation areas in new subdivisions.	■			■				■				
9. Almost all existing private residential and commercial uses should be maintained along the waterfront.	■	■										

LAND USE ELEMENT POLICY STATEMENTS	RELATION TO GENERAL PLAN ELEMENT											
	LAND USE					OTHER ELEMENTS						
	RESIDENTIAL	COMMERCIAL/INDUS.	PUBLIC FACILITIES	RECREATIONAL	HISTORIC	CIRCULATION/ TRANSPORTATION	HOUSING	CONSERVATION/ OPEN SPACE	SEISMIC SAFETY	NOISE	SCENIC HIGHWAYS	COMMUNITY SAFETY
10. The City should concentrate its community commercial uses in the single commercial center along historic First Street between its natural beginning at the waterfront and its natural end at Solano Square.		■										
11. The City should develop a pedestrian-scale, commercial peninsula centered on First Street below G Street with water-oriented boardwalk shops to the west and by the marina facility to the east.		■										
12. Neighborhood Convenience Commercial centers should be restricted in scale and orientation to serve only the surrounding neighborhood and should be placed near neighborhood entries.		■										
13. The City should not permit any additional commercial zoning which is oriented to exploit the freeway system.		■									■	
14. Commercial development in the vicinity of Military Highway and East Fifth Street should be limited in area; the sales and service of furniture and appliances and the provision for services and supplies related to motor vehicles should be encouraged.		■										
15. New visitor lodging facilities should be encouraged to locate near the new City marina and foot of First St.		■										
16. Future professional office and commercial uses should be encouraged to utilize rather than replace older residential structures in commercial zones east and west of First Street in order to maintain Benicia's history.		■			■							
17. Residential land use densities should not exceed 3 units per gross ac.in the outlying parts of the Upland Planning Area near the City-owned Lake Herman Property.	■							■				

LAND USE ELEMENT POLICY STATEMENTS	RELATION TO GENERAL PLAN ELEMENT											
	LAND USE					OTHER ELEMENTS						
	RESIDENTIAL	COMMERCIAL/INDUS.	PUBLIC FACILITIES	RECREATIONAL	HISTORIC	CIRCULATION/ TRANSPORTATION	HOUSING	CONSERVATION/ OPEN SPACE	SEISMIC SAFETY	NOISE	SCENIC HIGHWAYS	COMMUNITY SAFETY
Major, regional visitor's areas for commercial and historic recreation should be created along lower First Street.		■		■								
A marina and park should be developed to form a buffer between the community and the port and industrial areas along the waterfront.		■		■				■				
No fill shall be permitted, except for minor fill to improve shoreline appearance and provide needed public access; for public recreation and marina purposes, and in the Marina Basin only for water-oriented commercial recreation and public assembly uses with certain exceptions.		■		■								
The City should encourage major industrial uses to locate within natural topographic boundaries in the basin north-east of the downtown.		■										
The City should encourage light industrial uses to locate in the area immediately north of the Highlands Subdivision with landscaping to preserve the natural ridge profile.		■						■			■	
The City should encourage the increased development of container handling and import-export shipping facilities along the waterfront between the George Miller Memorial Bridge and East Fifth Street.		■										
The City should encourage the development of a true industrial park with landscaped parking facilities and design attention to buildings in the industrial headquarters area. Industrial research and office uses should be blended with historical buildings and with the proposed historic park at the clock tower fortress overlooking the maritime activities of Benicia's port.		■			■							

LAND USE ELEMENT POLICY STATEMENTS	RELATION TO GENERAL PLAN ELEMENT											
	LAND USE					OTHER ELEMENTS						
	RESIDENTIAL	COMMERCIAL/INDUS.	PUBLIC FACILITIES	RECREATIONAL	HISTORIC	CIRCULATION/TRANSPORTATION	HOUSING	CONSERVATION/OPEN SPACE	SEISMIC SAFETY	NOISE	SCENIC HIGHWAYS	COMMUNITY SAFETY
25. Apartment densities in the Water-Oriented and Upland Planning Areas north of Highway 780 should be concentrated near neighborhood commercial uses and on arterials.	■					■						
26. The City should continue its active role in providing a special meeting place for senior citizens near City Hall.			■									
27. The City should work with the School District to set aside appropriate public school sites for future expansion and new construction.			■									
28. The City should establish a museum in the clock tower fortress to display important documents of Benicia's history which may otherwise be lost to future historians and students.			■		■							
29. The City should insure that appropriate sites are set aside and new branch fire stations constructed to serve new residential and industrial areas north of Interstate 780.			■									
30. The City should sponsor the undergrounding of utility lines along the major entrances to the downtown in conjunction with street tree planting and appropriate sign control.			■								■	
31. All new development should be on city water and sewer lines; trunk lines to new areas of development should be sized according to the use densities shown in the General Plan rather than providing excess capacity which might stimulate growth where it is not desirable.			■									
32. Should a community hospital be contemplated for Benicia, it should be located with good access to Interstate 780 and be near the geographic center of the community.		■	■									
33. The City should encourage the development of a marsh interpretive center overlooking the Suisun Marsh Preserve.		■						■				

LAND USE ELEMENT POLICY STATEMENTS	RELATION TO GENERAL PLAN ELEMENT											
	LAND USE					OTHER ELEMENTS						
	RESIDENTIAL	COMMERCIAL/INDUS.	PUBLIC FACILITIES	RECREATIONAL	HISTORIC	CIRCULATION/ TRANSPORTATION	HOUSING	CONSERVATION/ OPEN SPACE	SEISMIC SAFETY	NOISE	SCENIC HIGHWAYS	COMMUNITY SAFETY
34. The City should acquire additional land for new civic buildings rather than encroaching on existing park land.			■					■				
35. The City should amend its parkland dedication ordinance to set forth minimum standards for land to be dedicated.				■				■				
36. Improvements should be made to existing park facilities and new facilities added in conformance with the Plan.				■								
37. The City should continue its policy of sharing facilities of the City with the School District and should look towards consolidation of park and school lands in order to save land acquisition and development costs.			■	■								
38. Recreation pathways should be developed following interesting routes such as along streambeds and hilltops in the hill areas north of Interstate 780. These should lead to Lake Herman, "the view hill", and should follow the streambed along West Seventh Street to connect with the waterfront pathway system.				■		■						
39. The City should preserve the Lake Herman area as a major recreational and scenic asset including nearby rock outcroppings and creekside vegetation; Lake Herman should be developed as a community park.				■				■				
40. The City should implement a pedestrian and bicycle pathway system connecting street-end parks along the waterfront between Southampton Bay and First Street. Privately dedicated walkways should be developed in the hill area and along the waterfront to link with the waterfront system.				■		■		■				

LAND USE ELEMENT	RELATION TO GENERAL PLAN ELEMENT											
	LAND USE					OTHER ELEMENTS						
	RESIDENTIAL	COMMERCIAL/INDUS.	PUBLIC FACILITIES	RECREATIONAL	HISTORIC	CIRCULATION/ TRANSPORTATION	HOUSING	CONSERVATION/ OPEN SPACE	SEISMIC SAFETY	NOISE	SCENIC HIGHWAYS	COMMUNITY SAFETY
POLICY STATEMENTS												
41. The City should develop and enhance recreational benefits of the shoreline, including additional provisions for fishing and pleasure boating.				■				■				
42. Maximum feasible public access shall be required in the form of a public pathway system from Point Benicia along the entire shoreline to the intersection of West Second and G Street. The granting of development permits by the City will require that public access be provided in conformance with design standards contained in the Special Area Plan.				■		■						
43. The City should recognize a broad zone of historic importance in and around Benicia's First Street Core Area.					■							
44. The City should develop an historic park incorporating the stone clock tower fortress and elegant Commandant's House overlooking the maritime activities of Benicia's Port.					■							
45. The City should develop and historic and scenic route which ties together the downtown historic district, the arsenal park and other attractions such as Lake Herman and the overlook park on "view hill", north of Interstate 780.					■						■	
46. A design review procedure should be continued for all new buildings, signs and other uses in the downtown historic district in Benicia.					■							
47. Consideration should be given to finding vacant land within the historic district to which historic buildings from other parts of the community could be moved if development threatens their existence.					■			■				

Programs for Land Use Element Implementation

Benicia currently utilizes the CEQA environmental review procedure a Zoning Ordinance and a Subdivision Ordinance to regulate public and private development proposals. Consideration should be given to the benefits of adding growth management mechanisms to regulate the timing of development and amending the parkland dedication ordinance to insure minimum physiographic standards.

Benicia currently utilizes a system of development fees to minimize such effects of land use as school impact and to provide a fund for park improvements. These could be improved by linking the School District's plans for capital improvements to those prepared by the City for park improvements.

Below are listed both existing and proposed action programs for Plan implementation. Reference is made as to whether the program is existing or proposed, the responsibility for its operation and the policies which are affected by its operation.

California Environmental Quality Act (CEQA) Environmental Review Procedures. (Existing). Private and public land use proposals undergo an initial study to determine if environmental impacts will result. A determination is made as to whether a Negative Declaration is appropriate or an Environmental Impact Report (EIR) required. Public input is collected and a decision is made regarding completeness and accuracy of the report before a project is approved or denied.

Responsibilities

City Planner - Prepares initial study; coordinates review process.

Environmental Review Committee - Determines reporting requirements.

Department Heads - Comments on environmental reports.

Interested Citizens - Provide input regarding report adequacy.

Planning Commission - Recommending body.

City Council - Decision making body; certifies report.

Policies Affected

All Land Use Element Policies.

Zoning Ordinance. Sets forth specific minimum spatial, intensity and performance requirements for each type of land use consistent with the broader goals and policies of the General Plan. Includes site plan and architectural review aspects. (Existing)

Responsibilities

City Planner - Evaluation of projects per standards; coordinates the review process.

Department Heads - Comment on develop proposals; suggest conditions of project approval.

Interested Citizens - Provide input regarding suitability of specific uses at specific places.

Planning Commission - Decision making body - recommends, approves, denies or City Council proposed projects, with or without conditions, based on findings set forth in the ordinance.

Policies Affected

All Land Use Element Policies.

Comments

Comment from Department Heads (particularly from police and fire) on new projects is extremely important.

Subdivision Ordinance. Sets forth minimum standards for land divisions, access and utility service. Requires fees to offset public costs of certain public utilities, facilities and services. (Existing)

Responsibilities

City Planner - Reviews tentative and final subdivision maps; coordinates the review process.

Department Heads - Comment on development proposals; suggest conditions of approval.

Interested Citizens - Provide input regarding suitability of project.

Planning Commission - Decision-making body, recommends, approves, denies or City Council subdivision, with or without conditions, based on findings set forth in the ordinance.

Subdivision Ordinance (Continued)

Affected Policies

Land Use Policies: 4,6,7,8,11,12 ,14 ,17,27,30,31,34,35,37,38,39,40, 42.

Comments

Comment from Department Heads (particularly from police and fire) on new projects is extremely important.

Capital Improvement Program - Parks (Existing). A plan identifying park needs and priorities tied to available and proposed funding scheduled over time.

Responsibilities

City Planner - Coordinates park dedication and improvement proposals with the City's Parks and Recreation Supervisor.

Park and Recreation Director - Maintains parks C.I.P.; coordinates park improvement and maintenance proposals with the City's Public Works department (Maintenance).

Interested Citizens - Provide input to park and recreation needs.

City Council - Adopts Annual Budget.

Affected Policies

Land Use Policies: 6,7,8,19,28,33,34,35,37,38,39,40,41,42,44,45,47.

Comment

Time commitment to keeping this C.I.P. up-to-date is time consuming and can detract from other programs especially during budget.

Parkland Dedication Ordinance (Proposed). Amendment to the ordinance setting forth minimum physiographic, size and distance criteria for land to be dedicated and accepted for park purposes.

Responsibilities

Park and Recreation Director - Prepare draft amendments.

Department Heads - Provide input to draft.

Parkland Dedication Ordinance (Continued)

Interested Citizens - Provide input to draft amendments.

Planning Commission - Recommending body.

City Council - Adopts amended ordinance.

Affected Policies

Land Use Policies: 6,7,8,19,35,36,37,38,39,40,41,42.

Comment

Initial time commitment by staff; could detract from other programs.

Historic District Regulations (Proposed). A set of design guidelines, building code provisions and sign controls aimed at preserving and enhancing the integrity of historic districts to which they are applied. The regulations would cover new projects as well as rehabilitation of existing facilities.

Responsibilities

City Planner - Prepare draft regulations for amendment to zoning ordinance; coordinate the review of proposals.

Building Department - Prepare draft ordinance to supplement the building code relaxing certain requirements for older buildings where the code is aimed more at convenience than direct life safety and health.

Interested Citizens - Provide input to draft ordinances.

Planning Commission - Recommending body.

City Council - Adopts ordinance revisions.

Policies Affected

Land Use Policies: 1,9,10,11,15,16,18,43,45,46,47.

Comments

Consultant involvement may be beneficial.

Growth Management Provisions (Proposed). Program for regulating the timing and placement of residential development to insure that adequate, improved park and school facilities and water supply can be provided for community development demand.

Responsibilities

City Planner - Prepare analysis and draft ordinance; coordinate the ongoing program.

Department Heads - Provide input to draft regulations; submit comments during the ongoing program.

Interested Citizens - Provide input to draft regulations and ongoing program.

Planning Commission - Recommending body.

City Council - Decision making body; adopts regulations.

Affected Policies

Land Use Policies: 1-8,17,25,27,29,31,37.

Comment

Consultant involvement may be beneficial.

CIRCULATION ELEMENT

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CIRCULATION ELEMENT

Purpose

The Circulation Element is intended to describe facilities for the movement of people and goods throughout the City. It includes a plan of the streets, highways, rail and water transportation facilities designed to serve the community in the most efficient manner. The location and appropriate size of roads for private auto use is important in Benicia as are provision of bicycle and pedestrian facilities and transportation for the physically and economically handicapped.

Relation to Other Elements

The Circulation Element is related primarily to the Land Use and Housing Elements. Circulation routes must consider the accommodation of public utilities, the intensity and pattern of land use and the provision of logical connections among destination points for access and safety. Transportation routes must be sensitive to employment locations and concentrations of residential groups to be served.

Circulation System

The street system within Benicia is structured around arterial streets which carry the larger volume of traffic around, rather than through, residential districts, commercial districts and industrial districts. The arterials are fed by collector streets which act to collect traffic from local streets within each of the districts. Because Highway 780 cuts through the community and is linked to the arterial streets, it is used by many residents for local travel. Usable road width, sight distance and travel speed generally increase as one moves from local streets to more important travel routes. Overall, the amount of total traffic is expected to increase by approximately two percent each year on most streets as a result of increased population. This incremental increase in volume slowly increases pressure for road widening in some places and the installation of stop signs and signals at intersections.

Major Highways. Interstate Highways 680 and 780 are major highways affecting Benicia. The average daily traffic volume on each is about equal although the volumes on 680 are slightly higher and the percentage of truck traffic is greater. Each of these highways is a significant source of noise affecting the community and each is considered a locally recognized scenic route. Traffic volume along 780, in the vicinity of East 2nd Street, is approximately 18,000 vehicles per day (CalTrans, 1977); the theoretical capacity of this four lane highway is estimated at 40 - 60,000 vehicles per day thus there remains some 70 percent additional capacity.

Highway 680 carries an average daily traffic load of about 21,000 vehicles (CalTrans, 1977). The theoretical capacity of this four lane highway is estimated at 40 - 60,000 vehicles per day thus there remains some 65 percent unused capacity. The opening of the Industrial Park interchange at the viaduct on 680 in 1979, is expected to draw most of the truck traffic which had earlier used Highway 780 to East 5th Street. The temporary decrease in traffic along the portion of 780 from the Benicia Bridge to East 5th Street is expected to be only short lived. As the new Benicia marina moves into full operation in the future, automobile traffic is expected to increase again. Full signalization at East 5th Street and Military Highway should be anticipated.

Urban Arterial Streets. Arterial streets comprise the major network of streets within the community. Their function is to link residential, commercial and industrial districts with the highways system, to provide convenient access to the First Street Core area and marina, to act as the major emergency service and evacuation routes, and to serve the industrial area. Arterials are typically 2 to 4 lane streets having some controls over parking and access points. The major arterials having 2 or 4 lanes provide the major linkages while the minor arterials, nearly always 2 lanes, relieve pressure from the major routes. The minor arterials also perform the important function of acting as alternative east-west and north-south routes should the freeway system be blocked to emergency vehicles.

Major Arterials

Southampton Road
Lake Herman Road
Military Highway
East 2nd Street
Park Road
Adams Street
Bayshore Road
Industrial Way
Canyon Drive (Future)

Minor Arterials

West K Street
West J Street
East H Street
East 5th Street
Panorama Drive
Chelsea Hills Drive
Hastings Drive*
Warwick Drive*
Seaview Drive*
Hillcrest Avenue
Cambridge Drive (Future)*

* These streets are included as arterials in the Benicia General Plan but are not yet recognized by the State as part of the system. The City should encourage the state to include these other routes in the future.

The theoretical capacity of arterial streets ranges from 15 - 30,000 vehicles per day for major arterials and about 15,000 vehicles per day for minor arterials. Most of the arterial streets in Benicia

are presently operating well below the theoretical capacity. Recent improvements to Military West have resulted in increased capacity. The addition of the Southampton Interchange with Highway 780 resulted in a significant decrease in the amount of traffic on West 7th Street. Traffic counts taken in 1976 indicated an average daily traffic load on West 7th north of Military West of about 11,500 vehicles. Traffic counts taken in 1979 indicate a drop in average daily traffic to about 5800 vehicles.

Circulation access to the downtown consists of a system of inter-connected arterials. The First Street Peninsula is intended to be served by First Street and East 5th Street between H Street and Military Highway. People are brought in from the west along Military Highway, J and K Streets. People are brought in from the east along Military Highway and H Street.

Circulation to future residential areas north of Interstate 780 is designed to bring people to the downtown. Southampton Road is a major arterial which connects these residential areas at two places to Military Highway. In the future a connection should be made from the Upland Planning Area to East 2nd Street and a connection along Canyon Drive from Highway 780 near Columbus Parkway. These connections are important for safety purposes in order to allow reasonable response time for emergency vehicles and to provide for alternate access if the freeway system is damaged or blocked.

Recommended locations for future roads are shown in the Circulation System Map for the Upland and Lake Planning Areas. The alignment of these roads may change slightly due to specific problems of topography or opportunity for scenic orientation. The connection to the Upland Planning Area from East 2nd Street is, however, shown where visibility of oncoming motorists along East 2nd Street is best. Connection through the Lake Planning Area west of Lake Herman and an arterial extension into Sky Valley are shown in the plan. The connection into Sky Valley has great growth inducing potential so should not be improved until development areas closer to the downtown have been filled out.

Arterial streets play an important role as the entry points from the highway system into various districts of the City. Tree planting in conjunction with utility undergrounding should be considered at each of the interchanges. East 2nd Street is a good example of where trees line the road to accentuate the entry to the downtown. Tree selection should be aimed at providing a pleasant edge to the road but not a canopy or dense foliage which could interrupt sight lines and be dangerous to traffic safety on arterial roads.

Collector Streets. Collector streets are of less importance than the urban arterials but should still be designed to carry through traffic. Their function is to transfer traffic from local traffic

generators (schools, shopping areas, employment areas) to the arterials. Collector streets generally do not form a continuous system, otherwise there would be a tendency to use them as arterials. The Plan for Benicia includes collectors serving the marina, various industrial areas and most residential districts. Future collectors are anticipated in the Upland and Lake Planning Areas. Collectors are intended to accommodate approximately 6 - 10,000 vehicles per day depending on the size of the area served; many will experience far less than this number.

Local Streets. The function of local streets is to provide access directly to abutting property. They play an important secondary role as locations for utilities, locations for easements, open space for light and air, and a firebreak between buildings. Through traffic from one part of the community to another is not intended to be carried on local streets. Local streets are an important element in community design because they provide a permanent framework for buildings and landscaping. Street trees on local streets can improve the community's image especially where new development is brought into the City. A program of street tree planting in new residential areas north of Highway 780 should be implemented to enhance the residential scale and to soften the visual impact of new buildings on the land. Tree selection should be aimed at providing a tree canopy which emphasizes the smaller scale of local streets and which provides welcome shade for pedestrians. In commercial and industrial areas, local streets provide access to parking and loading.

Street Standards. Standards for street rights-of-way and improvements are set forth in Benicia's Subdivision Ordinance.

Road Conditions Map

An inventory of road conditions was completed in 1979. The Road Conditions Map identifies those roads which are shown in the official City Map but which have not been improved with a paved road surface, curb, gutter and sidewalk. For the most part, Benicia roads have been improved. Most of the unimproved routes in Central Benicia are alley streets or are in locations where topography has limited the ability to install improvements. In some instances, new subdivisions were graded at the time of the survey but roads had not yet been installed. A second part of the survey was an inventory of those streets where sidewalks do not exist or are badly deteriorated. In nearly all instances there is a serviceable gutter to channel rain water runoff whether a sidewalk exists or not.

Parking and Traffic Congestion

Tarffic congestion can become a problem in Benicia's commercial areas if adequate off-street parking is not provided. This is most apparent in the older commercial areas of First Street and in the vicinity of

East 5th Street and Military Highway where the age of the development, in some cases, preceeded general availability of automobiles thus parking was not an important consideration. In the First Street area there will continue to be on street parking, but as the area intensifies there must be off-street parking facilities. The lower end of First Street will be well served by significant parking put in as part of the marina development. However, the owners of businesses in the central and upper part of First Street should be encouraged to provide surfaced and landscaped lots to serve these businesses. In the area of East 5th Street, strip type development should be curtailed by not granting rezoning of property outside the limits recommended in the Land Use Element. Strip type development typically results in many access points along the road and thus a greater potential for congestion due to turning movements and accidents due to these conflicting traffic movements.

New commercial centers planned for the vicinity of Southampton Road and other locations will be required to meet the current standards of the Zoning Ordinance with regard to off-street parking. Congestion should not be a problem in these areas as long as access to these centers is created with safe ingress and egress from major roads.

Facilities for the Handicapped

Benicia should insist that extra wide parking spaces be provided for handicapped persons at locations near the entry to public buildings and business developments. Curb ramps at the street intersections along First Street and ramps to the future board walk shops in the First Street area should be made conditions of project approval for new developments where possible. Such ramps facilitate wheelchairs.

Pedestrian Facilities

The important waterfront pathway system and various pathways through canyons and parks in the hills north of Highway 780 are discussed in the Land Use Element and shown in the Parks and Recreation Map, Map 7. Additional detail about the waterfront system is included in the Waterfront Plan Appendix.

Pedestrian sidewalks should be provided in all residential areas along at least one side of the street. The Road Condition Map, contained in this element, identifies those areas where sidewalks should be installed. The exception to this general guideline is where a special pathway system is intended to serve the function of sidewalks through an area or in the case of the alley streets which are for convenience but not intended for major pedestrian use.

Benicia should encourage the development of pedestrian paths following streambeds in the hill areas as a way to link neighborhoods with schools, parks and convenience commercial destinations. In the

future a pathway system should be developed around Lake Herman leading to small picnic sites. The Lake Herman paths, creek paths and street side paths in the hill area should be connected along the system of linear parks down West 7th Street to the waterfront pedestrian and bicycle paths. Locations are suggested for paths in the undeveloped hill areas; however, due to topography and other reasons the alignments may change as the areas are developed.

A regional level trail system is proposed through the boundary hills between Benicia and Vallejo to connect Benicia State Park with such destinations as Blue Rock Springs Park and Lake Herman. The location will be worked out between the two cities working with the County in the future as will details of its implementation and maintenance.

Transportation Facilities

Transportation facilities provide for the movement of goods and people generally along fixed routes and on a fixed schedule in contrast to the circulation system of roads for private automobiles and trucks which permits random movement. Benicia is fortunate to have potential for three modes of transportation: water, rail and road.

Shipping Facilities. Benicia is fortunate to have a natural deep water channel readily adjacent to the shore along the Carquinez Strait. This channel permits container ships, fuel tankers and freighters with fairly deep draft (up to about 35 feet) to dock at Benicia's port facilities between the George Miller Memorial Bridge and East 5th Street. Benicia's port has been growing in importance as a center for import and temporary storage of automobiles pending clean up and shipment to dealers in the Bay Area. Expansion of the port facilities towards East 5th Street is consistent with plans prepared by the Bay Conservation and Development Commission (BCDC). Some form of screening buffer should be considered in the vicinity of East 5th Street as port back up activities may detract visually from the image desired at Benicia's marina to the west.

Marina. Benicia's marina is primarily a recreation oriented marina thus the extent to which it serves as a transportation component is limited. There is potential for the marina to be used as the base for organized recreational transportation such as fishing excursions or ferry terminal.

Public Bus. The privately operated Benicia-Vallejo Stageline provides a transportation link from Central Benicia primarily to hospitals, the Greyhound Bus Depot and shopping facilities in Vallejo. The bus service is limited in that the driver carries only those who return to Benicia and does not pick up and drop off passengers between stops once within Vallejo. Some consideration should be given in the

future to modifying the route in Benicia to add a stop in the area south of Military Highway and east of First Street where census information indicates a relatively high concentration of older residents.

Commuter Train. One possible appeal for newer residents in Benicia is the availability of Bay Area Rapid Transit trains in Concord and Pleasant Hill. Employment figures in the Housing Element indicate that some 11 to 12 percent of employed Benicia residents work in San Francisco. Energy savings can be enjoyed by those who use the BART trains rather than driving private vehicles. The City should not consider bus linkages across the bridge to Contra Costa County at this time but should encourage private car-pooling efforts and use of public rail transit.

Air. Benicia has no airport related facilities within the City Limits. Buchanan Field in Concord is a small airport primarily oriented to private planes and is the closest facility to Benicia. For international flights, Benicia residents must rely on Oakland International Airport and San Francisco International Airport. Oakland International Airport can be reached by Benicia residents in two ways: 1) by private vehicle, and 2) by Bay Area Rapid Transit train and bus link.

Rail Facilities. Rail service to Benicia consists of the main Southern Pacific Railroad line from Sacramento which once terminated at the foot of First Street, but now crosses the Carquinez Strait on a bridge paralleling the George Miller Memorial Bridge. Rail spur lines serve Benicia's heavy industrial area to the north and the port area along the southern waterfront. Rail service along the waterfront now terminates at East 5th Street.

New spur lines are concentrated in those parts of the heavy industrial area where the slope of the terrain is relatively gradual. Facilities developed on the steeper slopes must be served by trucks.

CIRCULATION ELEMENT POLICIES AND PROGRAMS

Circulation Element Policies

The policies on the following page are set forth to help guide decision making with regard to circulation and transportation in Benicia. While the principal element to which each policy relates is the Circulation Element, a cross index to other related elements is included.

Circulation Element Implementation Programs

The principal programs for implementation of circulation policies are described following the policies section.

CIRCULATION ELEMENT POLICY STATEMENTS	RELATION TO GENERAL PLAN ELEMENT											
	LAND USE					OTHER ELEMENTS						
	RESIDENTIAL	COMMERCIAL/INDUS.	PUBLIC FACILITIES	RECREATIONAL	HISTORIC	CIRCULATION/ TRANSPORTATION	HOUSING	CONSERVATION/ OPEN SPACE	SEISMIC SAFETY	NOISE	SCENIC HIGHWAYS	COMMUNITY SAFETY
1. Public and private off-street parking should be developed in Benicia's commercial areas to minimize traffic congestion.						■						
2. Recreational pathways should be developed following interesting routes such as along stream beds and hilltops in the areas north of Highway 780. These should lead to Lake Herman, 'the view hill', and should follow West 7th Street to connect with the waterfront pathway system.				■		■						
3. Commercial and Industrial truck traffic should be limited to arterial streets for movement through the City to destination points. Industrial traffic should be encouraged to use the Industrial Park interchange.						■						
4. The arterial street system should be used to bring people into the downtown from newer residential areas north of Highway 780.						■						
5. The City should encourage the development of new roads which facilitate the orderly development of future residential areas north of Highway 780. Improvement of roads in the Lake Planning Area and into Sky Valley should be avoided until development areas closer to downtown have first filled out.	■					■						

CIRCULATION ELEMENT POLICY STATEMENTS	RELATION TO GENERAL PLAN ELEMENT											
	LAND USE					OTHER ELEMENTS						
	RESIDENTIAL	COMMERCIAL/INDUS.	PUBLIC FACILITIES	RECREATIONAL	HISTORIC	CIRCULATION/ TRANSPORTATION	HOUSING	CONSERVATION/ OPEN SPACE	SEISMIC SAFETY	NOISE	SCENIC HIGHWAYS	COMMUNITY SAFETY
6. Pedestrian sidewalks should be provided in all residential areas along at least one side of the street. Some exceptions should be made where alternate paths exist and where not needed such as along alley streets.						■						
7. Facilities for the handicapped should be provided to allow parking near the entry to public facilities and in major business areas, and wheelchair ramps should be constructed.						■						
8. The City will consider the possibility of modifying the Benicia-Vallejo Stageline routing to include additional stops to better serve concentrations of older residents.						■						
9. Benicia should seek to get state approval of all the arterial routes shown in the Benicia Circulation Plan.						■						

Programs for Circulation Element Implementation

Circulation Element policies are intended to be implemented using existing City programs. The most pertinent programs are listed below. Reference is made as to the responsibility for program operation and the Circulation policies which are affected by program operation.

California Environmental Quality Act (CEQA) Environmental Review Procedure. The environmental review of proposed projects allows a review of proposed circulation facilities, traffic generation and the effects on existing facilities. (Existing)

Responsibilities

- City Planner - Prepares initial study; coordinates review process.
- Environmental Review Committee - Determines reporting requirements.
- Interested Citizens - Provide input regarding report adequacy.
- Planning Commission - Recommending body.
- City Council - Decision making body; certifies report.

Policies Affected

Circulation policies 1,2,3,4,5,6 and 7.

Subdivision Ordinance. The standards for circulation facilities are set forth in this ordinance. Proposed development should conform to minimum City standards. (Existing)

Responsibilities

- City Planner - Reviews tentative and final subdivision maps; coordinates the review process.
- City Engineer - Reviews technical data regarding traffic analysis.
- Interested Citizens - Provide input regarding project suitability.
- Planning Commission - Decision making body; recommends, approves, denies or City Council subdivision, with or without conditions, based on findings set forth on the ordinance.

Policies Affected

Circulation Policies 2,4,5,6 and 7.

Zoning Ordinance. The standards for parking facilities are set forth in this ordinance. Provisions for the handicapped are justified conditions for project approval to insure public welfare and safety.

Responsibilities

City Planner - Reviews projects per zoning standards; coordinates the review process.

Department Heads - Comment on development proposals; suggest conditions of approval.

Interested Citizens - Provide input regarding project suitability.

Planning Commission - Decision making body; recommends, approves, denies or City Council projects, with or without conditions, based on findings set forth in the ordinance.

Policies Affected

Circulation Policies 1 and 7.

Normal City Communications. Normal communication with private companies individuals and other governmental agencies are used to implement certain City policies. The use of the Industrial Park interchange on Highway 680 by trucks rather than the East 5th Street interchange on Highway 780 can be achieved by continuing normal communications with Benicia Industries. Benicia Industries is encouraging those firms with truck deliveries to have drivers use the Industrial Park interchange. Normal communications with the state can be used to indicate the City's desire to have the arterial system acknowledged.

Responsibilities

City Manager - Provides main conduit for formal City requests.

Department Heads - Formulate requests for City Manager.

City Council and Mayor - Official City policy body; formulate requests for City Manager or correspond directly through Mayor.

Policies Affected

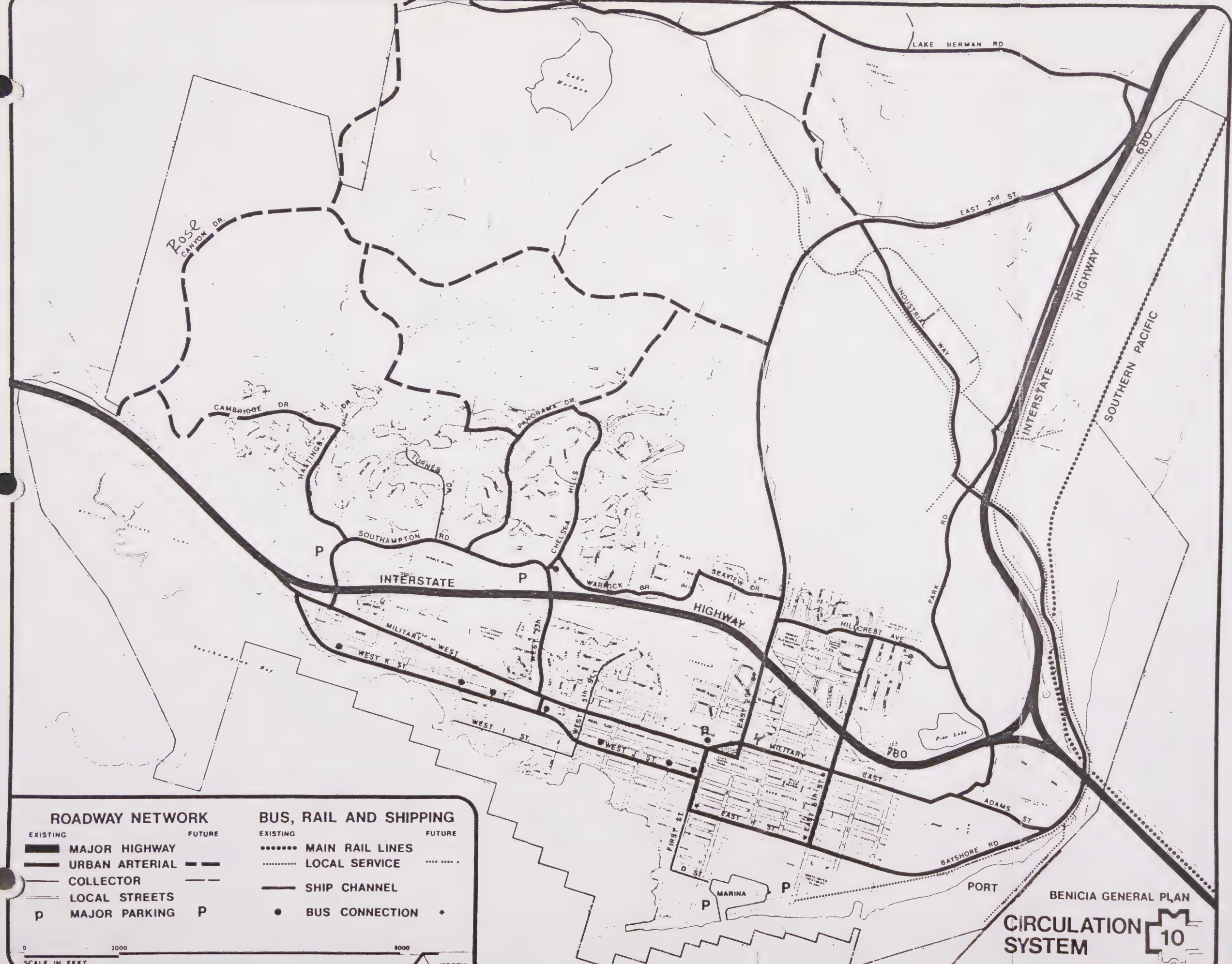
Circulation Policies 3,8 and 9.



..... UNIMPROVED ROAD
—— NO SIDEWALK

0 2000 8000
SCALE IN FEET NORTH

BENICIA GENERAL PLAN
ROAD
CONDITIONS 9



ROADWAY NETWORK

- | | |
|----------------|-----------------------|
| EXISTING | FUTURE |
| MAJOR HIGHWAY | FUTURE MAJOR HIGHWAY |
| URBAN ARTERIAL | FUTURE URBAN ARTERIAL |
| COLLECTOR | FUTURE COLLECTOR |
| LOCAL STREETS | FUTURE LOCAL STREETS |
| MAJOR PARKING | FUTURE MAJOR PARKING |

BUS, RAIL AND SHIPPING

- | | |
|-----------------|------------------------|
| EXISTING | FUTURE |
| MAIN RAIL LINES | FUTURE MAIN RAIL LINES |
| LOCAL SERVICE | FUTURE LOCAL SERVICE |
| SHIP CHANNEL | FUTURE SHIP CHANNEL |
| BUS CONNECTION | FUTURE BUS CONNECTION |

0 2000 8000
SCALE IN FEET
NORTH

BENICIA GENERAL PLAN

HOUSING ELEMENT

MARCH 18, 1986

Resolution 86-52

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HOUSING ELEMENT

INTRODUCTION

Purpose

The Housing Element is intended to evaluate the housing needs of all economic segments of the community and to develop policies and programs aimed at providing housing to meet the identified needs. Total housing needs are expressed in terms of the community's internal need plus a fair share of the Bay Area housing market need. Both short and long range objectives are included. Projections, where appropriate, are made to 1995.

Concept of Affordable Housing

Individuals and families should be able to find a place to live that is safe, decent and not overcrowded that can be rented or purchased for a reasonable portion of their gross income. Many low and moderate income households (defined later) cannot pay more than 25% of their gross income for housing and still pay for necessary food, clothing, transportation and medical expenses. Affordability is particularly critical to those who are unable to increase their incomes at a rate which keeps pace with expenses. On the other hand, those households with high incomes are able to make a choice that more than 25% of gross income will be spent on housing because their remaining resources are sufficient for both essential and discretionary expenditures.

Concept of Housing Need

Housing need can be defined as the shortfall of affordable housing supply available to any given income group. Housing need is defined, in particular, in terms of lower income household needs.

Relation to Other Elements

The Housing Element is closely related to the Land Use, Open Space and Circulation Elements. In the Housing Element, residential land use is translated into terms of household units to be accommodated in the future. Adequate sites for new housing are identified in the Land Use Element; the location, site area and terrain suitable for housing is related to both Open Space and Land Use; and, the capability of serving residential neighborhoods by an efficient circulation system is discussed in the Circulation Element. The availability of jobs is important since pressure for housing is generated by the desire of most people to live in units they can afford close to their place of employment. Present and future employment opportunities are discussed in the Housing Element.

Data Base

The primary data base used for the Housing Element (1985) is the 1980 U.S. Census. Population, housing and ethnic information was drawn from Tape File 1-A which represents 100% count data. Income, employment and additional housing data was taken from the Summary Tape File 3-A which represents sample count data. The determination of housing need is provided by the Association of Bay Area Governments (ABAG) from their most recent compilation, adopted in December, 1983. These sources are augmented, where appropriate, by the 1975 Solano County Special Census, by home buyer surveys obtained from developers, housing cost analyses obtained from realtors, building permit records kept by the City of Benicia and results of a current housing inventory compiled in June, 1985 by Martin.Carpenter.Associates (MCA).

Community Statistical Areas

The Census Tract Map (Exhibit H-1) identifies the three Federal Census tracts covering Benicia. These tract numbers appear in the various statistical tables within the housing element.

State Housing Policies and Legislation

Over the last 5-10 years the California State government has become increasingly committed to housing issues. A summary of those actions affecting Benicia are described below:

State Housing Plan. California's Statewide Housing Plan, prepared in 1977, defines five basic housing issues facing California:

1. Existing neighborhoods and housing should be conserved and improved.
2. The rising cost of new housing should be kept down.
3. Adequate housing for lower income households should be found.
4. Housing discrimination should be reduced.
5. Housing information should be available for both developers and consumers.

The Housing Plan recognizes several important guiding principles, among which is the belief that the private sector is, and should be, the major provider of housing. The government's role is to do what it can to make the private market responsive to the needs of all income, age, race and ethnic groups and to help private industry provide a wide variety of housing types, sizes and prices.



TRACT 2521.01

TRACT 2521.02

TRACT 2520.00

Legislative Policy. California statutes were amended in 1980 to establish state policy, legislative intent, and requirements for cities and counties to prepare substantially more detailed general plan housing element. The amendment, contained in Section 65580 of the California Government Code, replaced a more general requirement for local agency preparation of a housing element. The legislative policy stated in the code is:

- A. Availability of housing is of vital state-wide importance.
- B. The early attainment of decent housing and a suitable living environment for every California family is a high priority.
- C. Cooperative participation of government and the private sector is required to expand housing opportunities and accommodate needs of Californians of all economic levels.
- D. The cooperation of all levels of government is required to provide affordable housing.
- E. Local and state governments have a responsibility to facilitate the improvement and development of housing that makes adequate provision for the housing needs of all economic segments of the community.
- F. Local governments also have the responsibility to consider economic, environmental, and fiscal factors and general plan community goals in addressing housing needs.
- G. Local governments have the responsibility to cooperate with other local governments and the state in addressing regional housing needs.

Legislative Intent. The Legislature expressed its intent in enacting the current statute, indicating that local governments must recognize their responsibility in implementing the state housing goal. Part of that responsibility is the preparation and implementation of general plan housing elements which, along with federal and state programs, will move toward the attainment of the goal. The Legislature expressly recognized that each local jurisdiction is best capable of determining what efforts are necessary in its contribution to achievement of the goal, within the framework of state policies and regional housing needs. The Legislature further urged cooperation among local jurisdictions in efforts to address regional housing needs.

Specific Government Code Applications. Legislative policy and law pertaining to housing is contained in various sections of the California Government Code. Those sections containing specific applications to housing in Benicia are given below:

1. Land Resource for Housing (Section 65913). Benicia must designate sufficient land for residential use to meet the housing need, identified in the general plan. In zoning the land, appropriate standards for density, floor area, setbacks, parking and site coverage should be applied to make it economically feasible to produce housing at the lowest possible cost.
2. Density Bonuses (Section 65915). Benicia must grant density bonuses or other incentives of equal value to developers providing low and moderate income housing units.
 - a. A 25% density increase must be given when at least 25% of the total units in a development are for persons and families of low or moderate income.
 - b. A 25% density increase must be given when at least 10% of the total units in a development are for lower income households.
3. Second Housing Units (Sections 65852.1 and 65852.2).
 - a. Under 65852.1 Benicia can allow second dwelling units on a single family use lot for adults over 60 years of age if the floor area does not exceed 640 square feet.
 - b. Under 65852.2 Benicia must allow second dwelling units in both single family and multiple family residential districts although specific areas in the city may be designated for this type of unit, various standards can be applied and a Conditional Use Permit procedure can be imposed.
4. Mobile Homes and Factory Built Housing (Section 65852.3). Benicia must allow mobile homes and factory built housing to be installed on permanent foundations on lots zoned for single family dwellings, provided the setbacks, parking and other requirements applicable to other single family dwellings are met. Specific areas of the city may be designated for this type of unit, however any architectural requirements imposed must be consistent with those imposed on other single family homes and are limited to roof overhangs, roofing materials and siding.

POPULATION AND EMPLOYMENT CHARACTERISTICS

Historic Population Growth and Future Projections

Benicia was founded in 1847 and provided a convenient port along the way to California's gold fields. A significant population increase was experienced during the period 1940-50 due to wartime employment at the Mare Island Shipyards in Vallejo and at the U.S. Arsenal in Benicia. In 1964 the U.S. Arsenal, measuring about 2,300 acres, was abandoned and the land taken over by Benicia Industries. Employment has increased steadily as new businesses move into the Benicia Industrial Park. In 1971 the Southampton Company acquired most of the undeveloped land north of Interstate Highway 780 and began building housing. The expanding employment opportunities coupled with the availability of new housing in Benicia and intense growth pressure in Central Contra Costa County has resulted in steady population increases in Benicia since 1970.

TABLE: H-1 POPULATION GROWTH AND FUTURE PROJECTIONS

<u>YEAR</u>	<u>POPULATION</u>	<u>SOURCE</u>
1850	1,000	U. S. Census
1900	2,571	U. S. Census
1940	2,419	U. S. Census
1950	7,284	U. S. Census
1960	6,070	U. S. Census
1970	7,352	U. S. Census
1975	10,754	(Special Census)
1980	15,376	U. S. Census
1985	20,680	State Department of Finance (1/1/85)
1995	24,002	1979 General Plan
2000	26,100	ABAG (3/85 Projections)

TABLE: H-2 CURRENT POPULATION BASE (1980 CENSUS)

Total Households	5,737	
Family Household Population		13,393
Non-Family Household Population		1,926
Household Population Subtotal		15,319
Average Household Size	2.67	
Group Quarters Population ¹		57
Total Population		15,376

¹ Information from an unmapped Tract (2521.99), most probably the count of persons from a ship in dock, is included in our analyses where applicable.

Population Characteristics

Comparison of earlier census data to the U.S. Census data from 1980 indicates that the median age of Benicia's population is older in 1980 than in 1970 or 1975. What has happened is that the average age of heads of households moving into Benicia (primarily Southhampton) since 1970 is in the mid-30 age group. This, combined with a decline in family size (fewer children), and the natural aging of the community has tended to raise the median age from 25 (1970) to 28 (1975) to 30.7 (1980).

TABLE: H-3 AGE CHARACTERISTICS

Total Population	1970 Benicia (%)	1975 Benicia (%)	1980 Benicia Population	1980 Benicia (%)	1980 County Population	1980 County (%)
Persons under Age 18	36.0	31.0	4,546	29.6	71,607	30.4
Persons Age 18-64	56.0	61.0	9,686	68.0	145,664	61.9
Persons Age 65 or +	8.0	8.0	1,144	7.4	17,932	7.6
Total Population	100.0	100.0	15,376	100.0	235,203	100.0
Median Age	25	28	30.7	-	28	-

Elderly Population. The analysis of age groups indicates that the elderly population, as a percentage of total population, has dropped slightly since 1970. This is due to added population in the under 18 age group. The elderly population is shown to be concentrated in Central Benicia.

TABLE: H-4 LOCATION OF ELDERLY POPULATION (1980 U.S. CENSUS)

Age 65 and Over by Census Tract	General Location (See Map H-1)	Male	Female	Total Elderly Population	Percent of Citywide Population (1978)
TRACT 2521.01	Hill Areas	139	147	286	1.86
TRACT 2521.02	East of City Hall	114	154	268	1.74
TRACT 2520.00	West of City Hall	247	343	590	3.84
TOTAL	Citywide	500	644	1,144	7.44

Racial and Ethnic Composition. As Benicia has grown in total population the proportion of different racial and ethnic groups has fluctuated. The 1970 Census indicated that Caucasians made up 96% of the heads of households. This proportion dropped to 87% by the time of the 1975 Special Census. The 1980 Census shows that this proportion has increased again slightly to 89.7%. Table H-5 profiles the ethnic breakdown in the total population and compares Benicia to Solano County.

TABLE: H-5 RACIAL AND ETHNIC PROFILE (1980 CENSUS)

TOTAL POPULATION	1980 BENICIA POPULATION	PERCENT	1980 SOLANO COUNTY POPULATION	PERCENT
White	13,298	86.5	174,181	74.1
Black	723	4.7	27,785	11.8
American Indian, Eskimo, Aleut	161	1.1	1,981	0.8
Asian, Pacific Isle	772	5.0	17,377	7.4
Other	422	2.7	13,879	5.9
Total	15,376	100.0	235,203	100.0
Persons of Spanish Origin ¹	978	6.5	24,773	10.5

¹ Persons of Spanish Origin constitute the largest ethnic group in Solano County and in Benicia. The two major sources of these residents is Mexico and Puerto Rico.

Employment Characteristics

Employment Pattern. Employment statistics are shown in Table H-6. Analysis of the 1980 census data for Benicia indicates that Asian males and Black females had the highest unemployment rates among racial groups in the labor force. In the total labor force slightly more males (202) than females (172) were unemployed. Unemployment overall in 1980 was shown as 3.3% of the labor force. Current figures (June 1985) for unemployment show that Solano County stands at 8.4% and Benicia is estimated at 4.7% based on the proportional relationship that existed between Benicia and the County in 1980¹.

In 1980 approximately 60% of the total Benicia labor force was male and 40% female. Over 60% of all households were married couples. By subtracting the one person households, single parent households and non-family households from the total number of households one can conclude that about 50% of all Benicia family households benefit by two incomes. This conclusion is substantiated from home buyer surveys compiled by the Southampton Company since 1977 that show up to 82% of new buyer families (1985) have working wives.²

The 1980 Census indicated that 7,778 persons, age 16 or over, were in the Benicia labor force and that 7,404 were employed. The total workers employed represents about 48% of the total population. Comparing the total labor force and total number of households indicates that each working household supplies, on the average, 1.36 workers, thus a demand for 1.36 jobs. About 80% of the total employment in 1979 was at full time jobs (over 35 hours per week) and the remaining 20% could be considered part time jobs.

¹ State Employment Development Department (June, 1985)

² Southampton Company, Buyer Surveys (1975-85)

Type and Location of Employment

About 99% of Benicia's labor force reported their occupation. Approximately 60% of the reported workers were in management, technical or sales occupations, while the remaining 40% were employed in service, manufacturing or labor related occupations. The distribution is shown in Table H-7.

Approximately 85% of Benicia's workers reported their location of employment. Of these about 31% reported working in Benicia, about 20% outside Benicia but still in Solano County, about 48% outside the county and the remainder worked out of state. Home buyer surveys compiled by the Southampton Company in 1979 and 1980 indicated that about 1/4 to 1/3 of the buyers worked locally, 1/4 to 1/3 in central Contra Costa County, and the balance in other east bay locations or in San Francisco. The 1980 Census indicated the average travel time for Benicia workers at about 23 minutes.

PLACE OF WORK (1980)

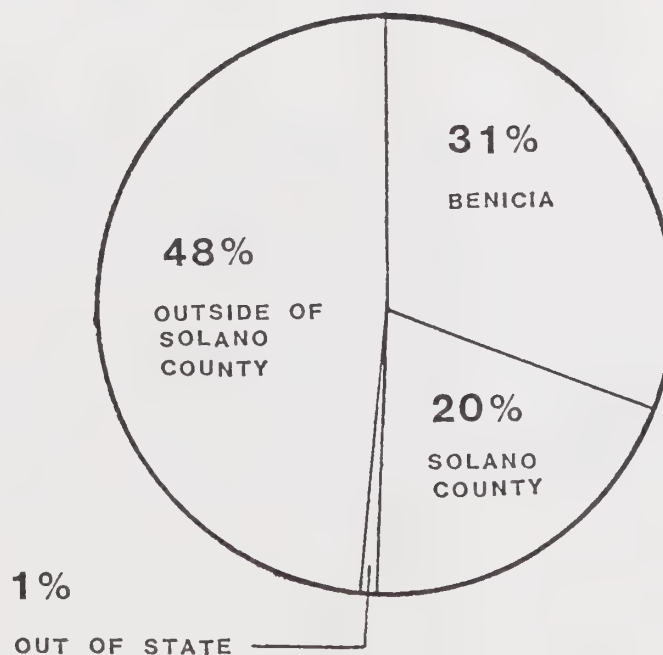


TABLE: H-6 1980 EMPLOYMENT PICTURE

LABOR FORCE	TOTAL PERSONS 16 AND OVER	EM- PLOYED PER- SONS 16+	% EM- PLOYED	UNEM- PLOYED PER- SONS 16+	% EM- PLOYED	PERSONS NOT IN IN LABOR FORCE	% NOT IN LABOR FORCE
MALE							
White	4,894	3,856	78.8	157	3.2	881	18.0
Black	256	212	82.8	12	4.7	32	12.5
Indian	79	62	78.5	6	7.6	11	13.9
Asian	211	154	73.0	18	8.5	39	18.5
Other	170	138	81.2	9	5.3	23	13.5
TOTAL	5,610	4,422	78.8	202	3.6	986	17.6
FEMALE							
White	5,042	2,581	51.2	143	2.8	2,318	46.0
Black	234	142	60.7	19	8.1	73	31.2
Indian	67	36	53.7	0	0	31	46.3
Asian	281	174	61.9	0	0	107	38.1
Other	128	49	38.3	10	7.8	69	53.9
TOTAL	5,752	2,982	51.8	172	3.0	2,598	45.2
GRAND TOTAL	11,362	7,404	65.2	374	3.3	3,584	31.5

TABLE: H-7 1980 REPORTED EMPLOYMENT BY OCCUPATION

Occupation Type	Number Employed	Percent of Those Reporting Occupation
Managerial	905	12.4
Professional	966	13.2
Technicians	258	3.5
Sales	895	12.2
Clerical	1,393	19.1
Service	2,009	27.5
Agricultural*	28	0.4
Labor & Manufacturing	854	11.7
Total Reporting	7,308	100.0
Non-Reporting	96	-

* This category represents employment in agriculture, fisheries, forestry and mining. Due to the location of Benicia on the Carquinez Strait, some employment in fisheries is anticipated. Syar Industries, which operates a quarry nearby Benicia, employs four Benicia residents. Little or no employment in forestry or agriculture is expected due to the distance from Benicia to farm or logging centers. Census data indicates that farm self-employment provided only supplemental income to 33 households in 1980. This suggests that some residents have farm enterprises that provide supplemental income and/or tax losses related to farm enterprise. From this analysis it is determined that no special attention need be considered for farm workers in the Benicia Housing Element.

Projected Job Demand

Table H-8 is used to present some estimates of future employment and the related number of jobs that will be required. Assumptions used in the table are listed as footnotes. Based on these assumptions approximately 48 new jobs must be created locally each year between 1985-95.

TABLE: H-8 PROJECTED JOB DEMAND

	1980	1985	1995	1985-95
Total Population	15,376	20,680	24,002	3,322
Labor Force ¹	7,778	10,460	12,140	1,680
Employed Persons ^{2,4}	7,404	9,968	11,533	1,565
Full Time	5,923	7,974	9,226	1,252
Part Time	1,481	1,994	2,307	313
Unemployed Persons	374	492	607	115
Local Jobs ³	2,295	3,090	3,575	485
Full Time	1,836	2,472	2,860	388
Part Time	459	618	715	97

¹ 1980 Labor Force was 50.58% of total population. This ratio is projected through 1995.

² 1980 employment was 96.7%; 1985 is estimated at 95.3%; 1995 is projected at 95%. The 1980 ratio of 80% full time and 20% part time jobs is also projected.

³ Approximately 85% of employed persons gave their place of work in 1979. Of these about 31% held positions in Benicia. Approximately 80% of all jobs were full time and 20% part time. These ratios are carried forward to 1995.

⁴ ABAG (March, 1985) projected the number of employed persons for Benicia at 7,542 (1980), 10,000 (1985) and 13,900 (1995).

Sources of Future Jobs

Benicia is a significant employment center due to the success of the Benicia Industrial Park which has been developing since 1964 when the U.S. Army abandoned its 2,300 acre arsenal site at Benicia. In 1975 Benicia Industries estimated that about 800 jobs in the industrial park were held by Benicia residents. That would have accounted for about 62% of all of the jobs held by Benicia residents in the immediate Benicia/Vallejo area at that time. A more recent estimate (Chamber of Commerce, 1985) is that the industrial park provides approximately 5,000 jobs. Using the earlier ratio, there could be up to 1,500 jobs in the industrial park that are held by Benicia residents. Additional sites are expected to be developed in the industrial park over the next 10 years. Other new jobs are anticipated when commercial uses are developed at the foot of First Street, between First Street and the Benicia Marina and in new commercial centers that will be developed north of Highway 780.

TABLE: H-9 ESTIMATE OF FUTURE JOBS IN BENICIA (1980-95)

SOURCE	ESTIMATED TOTAL NEW JOBS	JOBS LIKELY TO BE CLAIMED BY RESIDENTS ¹
Benicia Industrial Park	2,400	744
First Street and Marina Areas	200	62
North of Highway 780	100	31
Miscellaneous Retail & Service	100	31
Total	2,800	868

¹ Approximately 31% of employed residents reported their place of work as Benicia.

In comparing the projected job demand figures from Table H-8 to the estimate of future jobs likely to be developed in Benicia from Table H-9, it is apparent that there should be sufficient new local jobs to supply the future growth of the local labor force. It is estimated that if 31% of the projected future jobs were to be available for Benicia residents that approximately 868 jobs would be available. The total projected demand in 1995 is estimated to be 485 jobs. Therefore, the calculated surplus of local jobs could result in more than 31% of Benicia's labor force being able to find jobs within the City by 1995.

Housing Demand Related to Employment

Location of jobs is an important factor in determining the demand for new housing. It is generally accepted that people prefer to live near their place of employment provided housing cost is reasonable. At the time of the 1980 Census approximately half of Benicia's employed labor force worked in or near Benicia and about one-third worked within the City of Benicia. This is approximately the same ratio as existed in 1975. Assuming that Benicia will continue to average 1.3 workers per household, the 868 projected new jobs (Table H-9) would create a demand for 667 new housing units by 1995. This represents a demand for approximately 67 new units per year to house Benicia workers in newly created jobs.

HOUSING CHARACTERISTICS

Housing Supply and Vacancy Rate

A total of 5,908 year-round housing units were counted in Benicia during the 1980 U.S. Census. Approximately 2.9% of all units were vacant. This is a decrease from the 6% vacancy factor in 1975. The number of occupied housing units in 1980 was 5,737 and the average household size was 2.67 persons per household. Attached and detached single family homes accounted for 71% of the total housing stock in 1980. Owner units comprised 67%; 33% were rentals.

Tables H-10 and H-11 analyze housing by type of unit, and population by type of unit for both owner and renter populations. Table H-12 analyzes these populations by household size. It is interesting to note that over 82% of the total population lived in single family residences or in mobile homes. Only 10% of the population lived in complexes larger than a fourplex. Clearly more renters than owners resided in the larger complexes. Even though the average household size works out to be 2.67 persons it is interesting to note that owners have a sizable number of four person households while the predominant renter household has two persons.

TABLE: H-10 HOUSING STOCK, VACANCY RATE AND POPULATION OF OCCUPIED UNITS

UNIT TYPE	HOUSING AND POPULATION DATA							
	TOTAL NUMBER OF HOUSING UNITS	UNIT TYPE AS AS RATIO OF ALL UNITS(%)	# OF UNITS	VACANCY RATE BY TYPE(%)	TOTAL OCCUPIED UNITS	TOTAL POPULATION	POPULATION BY TYPE OF UNIT (%)	POPULATION PER OCCUPIED UNIT
Single Family Detached	3,887	65.8	90	2.3	3,797	11,463	74.6	3.0
Single Family Attached	286	4.8	0	0	286	712	4.6	2.5
Duplex to Fourplex	658	11.1	39	5.9	619	1,141	7.4	1.8
5 or More	838	14.2	35	4.2	803	1,539	10.0	1.9
Mobile Home	238	4.0	6	2.5	232	513	3.3	2.2
Other	1	0.1	1	-	-	8	0.1	-
TOTAL	5,908	100.0	171	2.9	5,737	15,376	100.0	2.67



- SINGLE FAMILY RESIDENTIAL
- 2 DUPLEX
- 3, 8 MULTIPLE

TABLE : H-11 OWNER AND RENTER POPULATIONS BY HOUSING TYPE

UNIT TYPE	OWNER DATA				RENTER DATA			
	OWNER POPULATION	# OF OCCUPIED UNITS	UNIT TYPE AS RATIO OF TOTAL UNITS (%)	POPULA- TION PER OCCUPIED UNITS	RENTER POPULA- TION	# OF OCCUPIED UNITS	UNIT TYPE AS RATIO OF TOTAL UNITS	POPULA- TION PER OCCUPIED UNIT
Single Family Detached	10,290	3,379	87.6	3.04	1,173	418	22.2	2.8
Single Family Attached	303	114	2.9	2.66	409	172	9.2	2.4
Duplex to Fourplex	111	83	2.1	1.34	1,030	536	28.6	1.9
Five or More	231	76	2.0	3.04	1,308	727	38.7	1.8
Mobile Home	463	207	5.4	2.24	50	25	1.3	2.0
TOTAL	11,398	3,859	100.0	2.95	3,970	1,878	100.0	2.1

TABLE: H-12 OWNER AND RENTER POPULATIONS BY HOUSEHOLD SIZE

HOUSEHOLD SIZE	TOTAL OCCUPIED UNITS	TOTAL POPULATION	OWNER UNITS	OWNER POPULATION	RENTER UNITS	RENTER POPULATION	GROUP QUARTERS
1 Person	1,291	1,291	542	542	749	749	-
2 Persons	1,832	3,664	1,264	2,528	568	1,136	-
3 Persons	979	2,937	725	2,175	254	762	-
4 Persons	1,045	4,180	839	3,356	206	824	-
5 Persons	396	1,980	159	1,039	35	330	-
6+ Persons	194	1,267	159	1,039	35	228	-
SUBTOTAL	5,737	15,319	3,859	11,290	1,878	4,029	-
GROUP QUARTERS	-	57	-	-	-	-	57
TOTAL	-	15,376	-	11,290	-	4,029	57

Community Growth and Household Mobility

Community Growth. Census data and building permit activity reveal that Benicia's housing stock and population roughly doubled between 1970 and 1980. Table H-13 delineates these changes. During the five year period from 1970-75 new units were added at the average rate of about 325 per year. About 300 units per year were also added during the five year period 1975-80. In the most recent five year period, 1980-85, the building permits for new residential construction have been issued at the average rate of about 425 per year. This represents an increase in housing stock of about 30%, since 1980, with a corresponding increase in population estimated at about 26%. A great deal of this change can be attributed to development of the Southamptton properties north of Highway 780 over the last 10-15 years. Southamptton developments alone have added 3,416 total units at a steady average of about 200 units per year.

TABLE: H-13 COMMUNITY GROWTH (1970-85)

GROWTH PERIOD	SINGLE FAMILY		MULTIPLE & MH		TOTAL	
	UNITS	POPULATION	UNITS	POPULATION	UNITS	POPULATION
1970 BASELINE	-	-	-	-	2,610	8,835
1975 BASELINE	2,679	7,627	1,520	3,127	4,229	10,754
1980 BASELINE	4,173	12,175	1,735	3,201	5,908	15,376
BUILDING PERMITS SINCE 1980 CENSUS - ADDED UNITS BY YEAR						
1979 ¹	408	-	6	-	414	-
1980	402	-	24	-	426	-
1981	432	-	2	-	434	-
1982	134	-	310	-	444	-
1983	161	-	288	-	449	-
1984	174	-	136	-	310	-
TOTAL 1980-84	1,711	-	766	-	2,477	-
1985 Year to Date ¹	31	-	22	-	53	-
GRAND TOTAL ²	5,915	-	2,523	-	8,438	20,680

¹ These figures include all units for which permits were issued after January 1979 and before March 1985. The 1980 Census was taken in April, 1979, and it is assumed that the time lag between permit issuance and building completion is three months.

² Grand total units is 1980 baseline + building permit activity 1979-85.
Grand total population is 1985 Department of Finance Number as of 1/1/85.

Mobility. Another measure of the community's relation to housing stock is the length of time that households reside at the same location. The 1975 Solano County Census contained special questions that determined that up to 30% of the households in the period 1970-75 had originated within the community and consisted of newly formed households or existing households which had merely moved from one dwelling to another. The 1980 Census does not contain this information. However, it reveals that approximately 71% of all the households counted had been in the same dwelling five years or less. Surveys conducted by the Southampton Company between 1977-85 indicate that new buyers come from the local Vallejo/Benicia area (1/4 to 1/3); from central Contra Costa County (1/4 to 1/3); from other Bay Area locations (about 1/4), and from out of Bay Area (about 10%).

TABLE: H-14 LENGTH OF TIME AT PRESENT ADDRESS (1980)

HOUSEHOLDS	1 YEAR	5 YEARS	10 YEARS	OVER 10 YEARS	TOTAL
Owner	910	1,527	654	768	8,859
Renter	1,046	592	124	116	1,878
Total	1,956	2,119	778	884	5,737
*Percent of Total	34.1	36.9	13.6	15.4	100.0

* Percent of total is number of households living in Benicia for a specified length of time, divided by the total number of households.

Housing Condition. Benicia's historic population growth provides a clue to the age of housing. Up until the 1940's, fewer than 1,000 housing units existed. During the 1940's, the Highlands and West Manor Subdivisions were built and through the 1950's another 1,000 to 1,500 units were added city-wide. It wasn't until the late 1960's, after the Arsenal phased out and the Southampton development began, that significant numbers of new units were added. As a result, Benicia has about 24% pre-1950 units and about 76% post-1950 units. The median age of all housing units was about 13 years (1980 U.S. Census).

The 1980 Census indicated a total of 5,908 dwelling units city-wide. Of these, a small percentage were found to be substandard. Table H-15 lists indicators used to distinguish substandard units.

TABLE: H-15 INDICATORS OF SUBSTANDARD HOUSING

INDICATORS	1970 CITYWIDE	1980 CITYWIDE	NUMBER OF UNITS											
			TRACT 2520.00				TRACT 2521.01				TRACT 2521.02			
			Owner	Renter	Vacant	Total	Owner	Renter	Vacant	Total	Owner	Renter	Vacant	Total
OVERCROWDING ¹	198	117	13	13	-	26	26	21	-	47	18	26	-	44
LACK BASIC FACILITIES														
Incomplete Plumbing ²	51	24	-	-	-	20	-	-	-	0	-	-	-	4
Incomplete Kitchen	-	38	-	-	-	18	-	-	-	12	-	-	-	8
0 to 1/2 Bath	-	79	17	27	0	44	-	10	6	16	4	15	-	19
Incomplete Heating	-	19	-	-	-	13	-	-	-	0	-	-	-	6
No Public Sewer	-	29	-	-	-	12	-	-	-	9	-	-	-	8
AGE														
Pre-1940 Unit	642	642	240	208	14	462	16	0	0	16	100	32	32	164

¹ More than 1.01 persons per room.

² Lacks complete plumbing for exclusive household use : This data is available for occupied units only..

Windshield Survey of Housing Condition. As part of the 1985 update of the Housing Element, a windshield survey of housing conditions was conducted. Three condition categories were identified: 1) Sound; 2) Transition; and 3) Deteriorated. In general, the areas where housing appears to be in transition from sound to deteriorated condition should be arrested. In areas where there are concentrations of housing units which appear in need of significant rehabilitation, first priority should be given to ensuring the residents' safety and health. At this time there are no units which have been identified as in need of total replacement. The Housing Condition Map, Exhibit H-3, indicates the subjective results of the windshield survey. The general location of units in the transitional and deteriorated condition categories is shown. As indicated on the Map, Tract 2521.02 has 29 deteriorated homes, the largest number per tract in the City. Tract 2520.00 is next with 13 homes in need of rehabilitation and then Tract 2521.01 with 8 deteriorated homes.

The results of the windshield survey give a slightly different conclusion about the location of substandard housing than the housing condition indicators presented in Table H-15. The windshield survey indicates physical conditions that are readily visible while the census survey is able to gather information about internal living conditions that are not visible from the street. Table H-15 shows that the location of indicator units corresponds to the areas with the greatest concentration of elderly residents and greatest concentration of older housing.

Housing Condition Related to Employment. Concentrations of housing in need of repair or rehabilitation exist in the Highlands area (Tract 2521.02), in the older part of town between West 5th and First Street (Tract 2520.00) and north of Military between West 8th and West 3rd (Tract 2521.01). No significant correlation was seen between unemployment and housing conditions. Tract 2520.00, with the lowest unemployment level in the City and Tract 2521.01 with the highest unemployment level both contain several small pockets of deteriorated homes. When comparing field observations to tract level census data for income, building age and building condition it appears that housing deterioration has more to do with age of buildings than lack of maintenance due to income limitations.



TRANSITION AREAS

6 NUMBER OF DETERIORATED HOMES

BENICIA GENERAL PLAN

HOUSING
CONDITION



Future Housing and Population Growth Estimates

Future Housing Growth. Development of residentially planned property is anticipated to continue in the future. Approximately 750 vacant subdivided parcels exist throughout the City at various planned densities. Substantial vacant acreage between Highway 780 and Lake Herman Road is owned by the Southampton Company and is already general planned for future residential use. Approximately 1,800-2,300 units could be accommodated. The Northern Area Study, (July, 1985), concluded that up to 7,900 residential units could also be developed in the Sky Valley, Central Hills and Eastern Watershed portions of Benicia's Sphere of Influence north of Lake Herman Road.

Future Population. For purposes of projection, future residential development is estimated to continue at a steady rate of 350 new units per year. Residential population is projected at the 1980 average of 2.67 persons per new household. Using these factors, new dwellings would be added at the rate of 1,750 units, and the population would increase by about 4,672 persons during each five year increment. These projections are shown in Table H-16. If this growth trend is realized, the 1995 population would reach about 30,000 persons; about 6,000 more than estimated in the 1979 Benicia General Plan. This reflects the potential use of some land in the area north of the 1979 city limits.

TABLE: H-16 HOUSING AND POPULATION PROJECTIONS

A. UNIT PROJECTIONS

HOUSING UNIT TYPE/SIZE	AVERAGE HOUSEHOLD SIZE (1980)	TOTAL HOUSING UNITS (1980)	ADDED UNITS (PERMITS) 1980-1984 ¹	ADDED UNITS PROJECTED 1985-90	ADDED UNITS PROJECTED 1991-95
Single Family Detached	3.01	3,887			
Attached up to 4 Units	2.05	944			
5+ Units	1.92	838			
Mobile Homes	2.21	238			
Total Added			2,477	1,750	1,750
TOTALS	2.68	5,908	8,385 (Cumulative)	10,135 (Cumulative)	11,885 (Cumulative)

B. POPULATION PROJECTIONS

HOUSING UNIT TYPE/SIZE	AVERAGE HOUSEHOLD SIZE (1980)	TOTAL 1980 POPULATION	ADDED POPULATION ² 1980-84	ADDED POPULATION 1985-90	ADDED POPULATION 1991-95
Single Unit	3.01	11,463			
Attached up to 4 Units	2.05	1,853	-	1,750 x 2.67	1,750 x 2.67
5+ Units	1.92	1,539			
Mobile Home	2.21	513			
Total Added				4,672	4,672
TOTALS	2.67	15,376	20,680	25,352 (Cumulative)	30,024 (Cumulative)

¹ Total added units are taken from Table H-13 and reflect all residential building permits added from the time of the census through December, 1984.

² Population is estimated by the State Department of Finance to be 20,680 as of January 1, 1985

Non-governmental Constraints to Housing

Topography. Benicia's rolling hills terrain is considered an aesthetic asset. The terrain provides a scenic backdrop to the City and affords pleasant views from residential neighborhoods. The cost of site preparation for residential development, however, increases in proportion to the ruggedness of the terrain. Housing development in Benicia, since the late '60's, has filled many of the flatter, vacant sites served by available utilities. Vacant land designated for residential use now exists in the form of scattered sites below Highway 780 and unsubdivided, unimproved rolling hills terrain above Highway 780.

Housing Discrimination. Benicia helps fund a Community Action Council aimed at providing services and emergency aid to senior citizens and low income persons. Indications from CAC are that families with children, particularly low income families with children, have a very difficult time finding housing. There are no indications that significant racial discrimination in housing exists nor that banks are reluctant to loan by geographic area in Benicia.

Housing Cost. The inflationary spiral which caused the cost of housing in the Central Bay Area to increase dramatically during the early and mid-1970's, reached Benicia during the middle and late 1970's. The mobility figures, discussed earlier, indicated that up to one-third of existing households during the 1970-75 period were selling older homes and moving into newer areas in the community. This tended to cause the cost for housing to increase for both the relocated household and at the original location since the new household would undoubtedly pay a higher rate for the older residences than did the original owner or renter. The effect of turnover in housing tends to cause an increase in the average household expenditure for both rentals and purchases. By 1980 the inflationary spiral in housing slowed and the real estate market has been more stable in the period 1980-85. The relatively high figure for households in place one year or less (1980) appears to be primarily related to new additions to housing stock and not to housing turnover within the community.

Another aspect of the problem of affordable housing, whether new or used, is the renter's dilemma (inability of lower income households to accumulate the first and last month's rent plus security deposit) and the prospective owner's dilemma (inability to accumulate the required down payment plus closing costs). The comparisons between household income and housing cost give a distorted view of ability to pay since the initial cost of acquiring a rental or owner unit is not reflected.

The median value, owner occupied house in Benicia was valued at \$92,400 in 1980 according to the U.S. Census. The County median was \$67,500, therefore the cost of home ownership was 26.9% higher in Benicia than the County in general. This may be due to the closer proximity of Benicia to the central Bay Area and to the substantial number of new homes in Benicia. The median contract rent levels were also higher for Benicia than the Solano County average in 1980. The median rent in Benicia was \$247 as compared to \$218 for the County.

In general, there is a prevailing range of price which can be applied to older housing and a separate range of price for newer housing in each of the census areas outlined on the Census Tract Map. Table H-17 compares the current range of house prices at each part of the City.

TABLE H-17: HOUSING COST - 11985 REAL ESTATE TRANSACTIONS

LOCATION	HOUSING COST		COMMENTS
	(Low \$)	(High)	
TRACT 2520.00			
West of West 6th	9 - 105	175-380	Hi includes old waterfront
West 2nd to West 6th	82 ⁵ - 95	145-340	Hi includes Victorians and waterfront
East 2nd to West 2nd	95- 110	200-235	Hi includes Victorians and marina
East 5th to East 2nd	25- 85	130-145	Lo includes mobile homes
TRACT 2521.01			
West of Chelsea Hills	75- 100	170-190	Lo includes condominiums
East of Chelsea Hills	105- 120	135-155	Lo includes condominiums
Below Highway 780	65- 85	135-147	Lo includes old and small units
TRACT 2521.02			
Above Highway 780	65- 70	80-115	Lo includes old and small units
Below Highway 780	75- 85	175-195	Lo includes old and small units

SOURCE: Local Realtors

Land Cost. Most new housing in Benicia is merchant built. Existing tracts of vacant land to the north of town are in large holdings. A small percentage of new homes results from the sale of vacant lots to individual owner/builders in the older part of the City. In these areas it is common that developers acquire several lots in areas where vacant lots are concentrated and then come forward with a project. Vacant, subdivided lots, suitable for single dwellings, account for approximately one-quarter to one-third the total cost of new homes as listed in Table H-17.

Finance Cost. Interest rates on borrowed money have a significant effect on the number of households that can afford to purchase a home. During the period 1980-85 interest rates fluctuated between 11-15% for a 30 year fixed loan. Monthly payments based on a \$90,000 home (Benicia median = \$92,400), 20% down payment and 30 year fixed loan would vary from \$686 (11%) to \$796 (13%) to \$910 (15%). Table H-19 can be used as a comparison between housing cost and ability to pay for various income groups in Benicia.

Construction Cost. New residential construction in Benicia currently averages about \$55-60 per square foot (1986). Higher costs result from custom design and finishes.

Total Housing Cost. Total cost is the sum of costs related to land (varies), processing fees (about \$6,000), site improvements (varies), construction \$55/sq.ft., marketing (6%) and profit (20%). Higher densities typically result in lower permit per unit costs for land and site improvements and some slight reduction in construction cost but the other factors remain about the same.

Methods Available to Reduce Housing Cost

Benicia has recognized several methods of reducing housing cost and has developed programs and/or regulations for this purpose. Very little use of these has occurred even though there are no unusually strict constraints built into the various regulations.

Residential Condominium Conversions. Benicia has adopted an ordinance regulating the conversion of existing rental apartments to units for sale (1981). Conversions are considered when it can be demonstrated that the existing rental vacancy rate is greater than five percent. Emphasis in the review of suitability is given to whether the units are separately metered for utilities, have adequate sound separation, have open space amenities and good security. The ordinance provides for proper tenant notification, first right of purchase to tenants, moving expenses for tenants and extra time provisions to handicapped and elderly tenants.

Manufactured Housing. Housing cost can be reduced by maximizing the efficient use of labor and materials in construction. Factory built modules, pre-cut houses and mobile homes are some examples. Little or no use of modular and pre-cut homes has occurred in Benicia; however, manufactured components such as roof trusses, panelized walls and plumbing trees are frequently used. Mobile homes, however, only accounted for about four percent of the total housing stock in 1980. No new mobile home units have been added in recent years. New construction of conventional units has caused the proportion of mobile homes to drop to about three percent of the housing stock in 1985, even though these units are generally 1/3 to 1/5 the cost of conventional single family units. Benicia has a mobile home park ordinance (adopted 1981) aimed at protecting existing facilities and establishing land use regulations for new facilities.

Assisted Housing. Benicia has an existing Housing Authority which manages 75 units of conventional low rent family housing. These units date back to about 1950. The Authority also manages 85 units of HUD, Section 8, rental assisted family housing at scattered locations throughout the City, and 40 units of CHFA State Elderly assisted housing in a project known as Casa de Vilarossa. A pending addition to the senior project could add 12-40 units. A pending application to HUD under the Section 8 voucher program could add 25 units.

Density Bonus. The number of residential units in a planned unit development may be increased by up to 10% above the number normally allowed in the parent zone. This existing provision of the Benicia Zoning Ordinance is an incentive related only to the attractiveness and efficiency of the project design.

HOUSING NEED ANALYSIS

Household Income. Table H-18 shows gross household income for all reporting households and how each income group compares to the total number of reporting households. Median household income for Benicia in 1980 was \$23,297, slightly higher than the County median of \$19,264.

TABLE: H-18 1980 HOUSEHOLD GROSS INCOME (REPORTING HOUSEHOLDS ONLY)

INCOME LEVEL (\$)	NUMBER OF HOUSEHOLDS REPORTING	% OF TOTAL HOUSEHOLDS REPORTING
LESS THAN \$ 2,500	130	2.27
\$ 2,500 to \$ 4,999	279	4.89
\$ 5,000 to \$ 7,499	280	4.89
\$ 7,500 to \$ 9,999	299	5.23
\$10,000 to \$12,499	416	7.27
\$12,500 to \$14,999	306	5.35
\$15,000 to \$17,499	284	4.96
\$17,500 to \$19,999	365	6.38
\$20,000 to \$22,499	388	6.78
\$22,500 to \$24,999	356	6.22
\$25,000 to \$27,499	411	7.18
\$27,500 to \$29,999	309	5.40
\$30,000 to \$34,999	600	10.49
\$35,500 to \$39,999	461	8.06
\$40,000 to \$49,999	551	9.63
\$50,000 to \$74,999	210	3.67
\$75,000 or more	76	1.33
TOTAL HOUSEHOLDS REPORTING	5,721	100.00

Ability to Pay for Housing. The 1980 U.S. Census recorded total household income and amount of income spent by households for rent or to buy housing. Federal and State agencies have established 25% of gross household income as a guideline for the maximum amount a household should have to pay for housing. This factor is analyzed in Tables H-21 and H-22. In today's market the majority of households actually pay about 30% of gross income for housing. For analysis purposes this expenditure level is used in Table H-19 to define the maximum affordable housing for each income group. Table H-19 also defines the various income groups identified in Federal and State references and illustrates the maximum affordable housing available to each, in 1980 dollars, using the 30% expenditure factor.

TABLE: H-19 MAXIMUM AFFORDABLE HOUSING EXPENDITURE BY INCOME GROUPS¹

INCOME GROUP	DEFINITION	1980 GROSS INCOME IN DOLLARS		MAXIMUM AFFORDABLE MONTHLY COST	
		Annual	Monthly	Owner	Renter
Poverty Level	Varies ²	5,787	482	205	145
Very Low	50% of County Median	9,632	803	345	240
Low Income	80% of County Median	15,411	1,284	550	385
Median	County Median Income	19,264	1,605	685	480
Moderate	120% of County Median	23,117	1,926	825	580
Above Moderate	Above 120% of Median	23,118+	1,927+	825+	580+

¹ Maximum renter expenditure is 30% of gross income; maximum monthly mortgage is 0.95% of house value assuming the maximum loan is 80% of sales price and loan amount equal to three times annual income. All numbers are rounded to the nearest five.

² Poverty level varies by family size and according to whether the head of household is under or over age 65. For comparison purposes the income level shown is for a standard three person household.

Household Income to Housing Cost Correlation for Benicia

Table H-20 is a comparison of local household income to local housing cost. The purpose of the analysis is to determine housing unit availability in each income category in Benicia. Income categories are therefore based on the Benicia median income of \$23,297 in 1980 and the guideline of spending no more than 25% of gross income for housing. It was necessary to manipulate the census data in order to perform the correlation. The total number of units in Benicia in 1980 was 5,908, the number of households reporting income was 5,721, and the number of households reporting housing cost was 5,174. Consequently the income and cost numbers in each category were proportionately increased in order to compare housing income to housing cost. Results of this analysis indicate that additional units are needed for households with moderate and above moderate incomes. When comparing these results to the data shown in subsequent Tables H-21 through H-24, however, it becomes apparent that households with higher incomes are occupying units requiring relatively low rental or mortgage expenditures. This situation arises where households purchased or began renting their units many years ago and the rates have not increased substantially.

TABLE: H-20 LOCAL HOUSEHOLD INCOME TO HOUSING COST CORRELATION FOR BENICIA

SPECIFIED INCOME CATEGORY	NUMBER OF HOUSEHOLDS WITH INCOMES IN SPECIFIED CATEGORIES	NUMBER OF HOUSING UNITS EXISTING IN 1980 AND AFFORDABLE BY INCOME CATEGORY		
		Owner	Renter	Total
Very Low	1,303	986	725	1,711
Low	927	594	883	1,477
Moderate	1,456	979	287	1,266
Above Moderate	2,222	1,416	38	1,454
TOTAL	5,908	3,975	1,933	5,908

Median Income (Benicia) \$23,297

Housing Overpayment

Tables H-21 and H-22 are an analysis of 1980 census data, analyzing lower income household overpayment for housing. The purpose of the analysis is to determine the number of ownership and rentership households in Benicia which are lower income (i.e. earning 80% or less of the County median income) and overpaying for housing (i.e., paying more than 25% of gross household income for housing). The cutoff point for income is \$15,411 based on the lower income definition. The boxed portion of the tables represents the total number of lower income rentership and ownership households which are overpaying. Since the income level of \$15,411 falls within a broader income range (\$15,000 to \$17,499) reported in the census, only a portion of the total households in the income range are included in the lower income household total. The method for calculating the actual number of lower income households is contained in the HCD publication titled Methodology for Calculating Lower Income Overpayment.

TABLE: H-21 RENTER HOUSEHOLD INCOME BY GROSS RENT AS A PERCENT OF INCOME

Rent as a Percent of Income	Renter Household Gross Income					Total
	\$0- 4,999	5,000- 9,999	10,000 14,999	15,000 19,999	20,000 or more	
0-19	0	7	54	151	560	772
20-24	14	48	96	55	56	269
25-34	17	73	161	49	23	323
35+	199	181	67	6	0	453
Not Computed	13	18	6	4	0	41
Total	243	327	384	265	639	1,858

Lower Income Cutoff = \$15,411 Gross Annual Income

Lower Income Renter Overpayment = 702 Households

TABLE: H-22 OWNER HOUSEHOLD INCOME BY SELECTED MONTHLY HOUSING COSTS
AS A PERCENT OF INCOME

Housing Cost as a % of Income	Owner Household Income					Total
	\$ 0 4,999	\$5,000 9,999	\$10,000 14,999	\$15,000 13,999	\$20,000 or more	
0-19	28	157	160	140	1,230	1,715
20-24	10	0	8	26	405	449
25-34	19	21	31	67	519	657
35+	60	29	61	82	229	461
Not Computed	26	0	0	0	0	26

Lower Income Cutoff = \$15,411.00 Gross Annual Income
Lower Income Owner Overpayment = 233 Households

ABAG Housing Needs Determination. The Association of Bay Area Governments (ABAG), in their publication titled Housing Needs Determination - San Francisco Bay Region (July, 1983), determined the existing and projected housing need for the Bay Area region. They have also calculated for counties and cities, a share of such need. Existing Housing Need is defined as the housing need for the Bay Area and its counties and cities in 1980. Projected housing Need is defined as the housing need for the Bay Area and its counties and cities in 1980. Projected housing need includes the number of housing units calculated as the 1980 need plus the number necessary to provide for anticipated growth in the number of households between 1980-1990 plus a factor aimed at providing some vacant housing to allow mobility in the housing market. Table H-23 delineates the ABAG housing need figures including a breakdown according to target income groups by owner and renter status. As of 1980 Benicia was determined to need 253 units more than the census count. By 1990 another 3,674 units will be needed. This translates into an average of 393 units per year between 1980-1990 and therefore should be able to be accomplished in absolute numbers given the building rates documented in Table H-14. Between 1980-84 in Benicia there were permits issued for 2,477 units or an average of 495 per year.

TABLE: H-23 ABAG HOUSING NEEDS DETERMINATION (1990 UNITS)

JURISDICTION	PROJECTED NEED TO 1990	NEED BREAKDOWN BY INCOME AND TENURE (1990 UNITS)									Above Moderate		
		Very Low Income			Low Income			Moderate Income					
		Owner	Renter	Total	Owner	Renter	Total	Owner	Renter	Total	Owner	Renter	Total
Benicia	3,927	581	283	864	423	205	628	581	283	864	1,057	514	1,571
Solano County	31,932	4,824	2,773	7,598	3,504	2,014	5,518	4,548	2,614	7,162	7,400	4,254	11,654

TABLE : H-24 COMPARISON BETWEEN ABAG NEEDS DETERMINATION AND
BENICIA HOUSING DEVELOPMENT (UNITS BY INCOME CATEGORY)

	Very Low	Low	Moderate	Above Moderate	Total ²
ABAG Projected	864	628	864	1,571	3,927
Units Constructed or in progress April, 1979 to June, 1985	100	25	1,209	1,281	2,530
Difference to be Accomplished July, 1985 to December, 1990	764	603	(-345)	290	1,397
Percent Complete	12	4	100	82	64

¹ Affordability level of new housing was determined by comparing sales and rental prices of units to income levels for each income category at the time new units were added.

² Totals will not add due to tabulation of Section 8 units which utilizes existing stock.

Special Housing Needs

Housing the Homeless. Interviews with the Benicia Housing Authority and with Benicia emergency services (police, fire) indicate that from 10-15 people per month request assistance because they are being evicted or have been living in a vehicle. About one-third of these requests are from Benicia residents; the balance are from people passing through. The Housing Authority maintains no emergency housing. Benicia residents typically find temporary housing with friends. Referrals include the Community Action Council (CAC) staffed by volunteers, often from the clergy, which can provide overnight lodging, meals and money for fuel. Other referrals are the Domestic Violence Project in Fairfield, which can provide counseling and housing for battered wives and the Youth in Family Services in Benicia which provides counseling for teenagers with housing difficulties.

Emergency Housing. In the event of a community disaster involving temporary loss of housing for a small number of people, the most likely resource would be use of local motels. If a large number of people were in need of temporary shelter the Benicia Fire Department would utilize the gymnasium adjacent to City Hall.

Disabled Persons. In Benicia persons with a public transportation disability constituted about two percent of the population. About one-half were over age 65 and one-half below age 65. Distribution was about equal in each of the three census tracts although there were slightly more elderly disabled in the hill area than below Highway 780. Assuming one disabled person in each household having a disabled person, then approximately 314 households were occupied by persons with disabilities in 1980. Access and parking for handicapped persons is incorporated into the design of new multiple housing; single family units may have to be modified for handicapped tenants.

Elderly Residents. Table H-4 documents the location of elderly in 1980. Of the 1,144 people over age 65 reported in the census, the largest concentration was found to be in the older part of the City west of City Hall.

Large Households. Table H-12 summarizes the count of owner and renter populations by household size. Households having six or more persons are considered large households. Census data shows nearly five times as many large owner households as large renter households. Benicia's housing stock consists of both old and many new homes. Many of the older wood frame residential buildings are large enough to accommodate large households. Some of the newer residential units built by the Southampton Company, for instance, include four bedroom homes. The

average year-round housing unit citywide has 5.6 rooms. Table H-15 indicates that overcrowding occurs about equally in the owner and renter categories at an incidence rate much lower than the occurrence of large families. There was a need for larger units for approximately 117 households according to the census. From the available data however, it is only possible to assume a correlation between large households and overcrowding. By comparing the available number of units with five or more bedrooms (149) to the number of households with six or more persons (194) there would be 45 of the 117 overcrowded households that are large households. This need would be split about equally between owner and renter households.

Female-Headed Households.

Census data for 1980 indicates that a total of 442 households were headed by females with no husbands present. 83% of this total (353 households) were female householders with children. Of these households 83% were White, 4% Black, 4% American Indian and 8% were householders of Spanish origin. The median number of children per household was 1.8 in 1980. About one-third of the children involved were ages 0 - 5 and two-thirds were ages 6 through 17. Census data also indicates that 89 households, approximately 25% of the female head of households with children, had incomes below the poverty level. Households with this income limitation were registered in each census tract but most probably would be located in the older parts of the City generally below Interstate 780 or east of East Second Street. Female head of households below the poverty level represented about 23% of all households receiving public assistance in 1980. In summary, there were 442 female head of households in 1980; 353 included children with the median being 1.8 children; 89% of the households with children had incomes below the poverty level. Additional low cost rental housing to serve female head of households are expected to be generated primarily by second unit, mixed use and shared housing programs.

Housing Constraints Related to Government Actions

City Policy. Past policy of the City of Benicia has been to resist any long term commitment to ongoing programs involving state or federal intervention in local housing. There has been a reluctance to pursue grants that would entail long term local administration. Due to there being minimal local staff, there has not been a commitment to pursuit of outside non-profit developers of housing for lower income households.

City Procedures and Fees. In public hearings on housing, citizens, staff and Planning Commissioners have suggested some procedures in the Zoning Ordinance could be simplified to encourage more innovative housing solutions including affordable units. At present the planned development process, for instance, involves three steps, while standard zoning only requires one. A complete revision of the zoning ordinance has been authorized by the City Council. Benicia has no unusual or unreasonably time consuming permit processing procedures nor any extraordinary permit fees. Whenever it is appropriate, related permits are processed simultaneously and credit for building fees is given when developers include infrastructure improvements that have community-wide benefit. Projects that provide lower income housing are given priority processing. The time required to process planning permits varies according to the type of environmental review involved. An EIR adds 4-10 months to the process time. The time range shown below reflects planning items processed with a Negative Declaration. The City uses Uniform Building and Safety Codes and has adopted the 1982 UBC. Building permits are typically processed in 10-30 days.

Planning Fees and Processing Time (1986)

General Plan Amendment (PC/CC)	\$200	2-6 months
Rezoning (PC/CC)	\$200	2-6
Use Permit (PC)	\$200	1-6
Planned Development (PC/CC)	\$200	2-6
Variance (PC)	\$200	1-6
Design Review (PC)	\$100	1-6
Minor Subdivision	\$200	1-6
Major Subdivision (PC/CC)	\$250+5 lot	2-6
Appeals	\$ 25	1
EIR (Based on 10% of contract amount)		

Building Fees per Unit

School Impact	\$1,500
Park and Recreation	700
Capital Improvement	580
Sewer Connection	1,300
Water Connection	1,300
Sewer Inspection	5
Water Meter	75
SMP (Earthquake)	6
Building Permit (Based on Construction Value)	Varies
Plan Check (Based on Permit Fee)	<u>65%</u>
Approximate Total	\$6,000

Community Attitude. In public hearings on housing some citizens have expressed fear about loss of local government control and damage to the free enterprise system if long term state and federal housing programs are undertaken. Aside from the public forum some citizens have expressed concern about lower income groups appearing to get something for nothing through housing subsidies and fear of property devaluation from having lower income residents nearby. A public referendum, passed about 1950, limits the Benicia Housing Authority to its present total of 75 standard family assisted housing units, however the Housing Authority may proceed with Section 8 and Senior Rental housing projects as described on pages H-49 and H-50. A referendum cannot be reversed by legislative action. Therefore, public support of a new referendum would be required to address the constraint on standard assisted housing.

Availability of Roads and Utilities. No water, sewer, power roads or other facilities exist in the undeveloped hill areas north and east of the present Southampton Company developments. These have been typically installed as part of the development process and dedicated to the City along with certain open space areas. Development has been expanding northward from existing utility hookups. More remote lands, such as those north of Lake Herman Road, would need to have all utilities extended a considerable distance for development of any magnitude to occur. Sufficient water supply and sewage plant capacity is periodically analyzed by the City and appropriate expansion is planned. Sewer and water connection fees contribute to these costs.

Availability of Assistance Programs. Recent reductions in federal and state assistance programs make it exceedingly difficult to provide affordable housing for lower income groups. Housing officials and developers generally agree that reductions in the cost of development are very difficult, thus assistance programs are needed to augment the payments available for housing. Benicia's best hope at present is for limited additional Section 8 and State Senior Rental Housing Assistance.

AVAILABILITY OF SITES FOR FUTURE HOUSING

Housing Site Availability Map. Exhibit 4 shows the inventory of land areas available for future residential development. All of the outlined mapped areas have the distinction of containing land that is already general planned for residential land use. The non-outlined areas north of Lake Herman Road were identified in the Northern Area Study (1985) and must be further analyzed and the land annexed prior to development. Although the total land area will most likely yield a low average density, the opportunity for some concentrations of higher density residential use at specific locations should be anticipated once detailed studies of these future areas is undertaken. At each map location is an estimate of the probably yield of new units. The estimated unit yield takes into account the zoning designation applied to the various sites and also the typical yield from similarly designated areas that are already developed. It is estimated that up to 120 residential units can be developed on underutilized commercial sites located below Interstate 780. Commercial land use exists along First Street, Military Highway and in the vicinity of East Fifth Street. This potential is included in Table H-25 but, due to site distribution, is not mapped.

Suitability Criteria. Those sites most easily developed for residential purposes in the short term (3-5 years) are those which maximize the use of existing community facilities (near shopping, public transportation and schools) and which require minimal site development (utilize existing roads and utilities, avoid geologic hazards and steep slopes). Undivided hill area land that is immediately contiguous to existing development could also meet these criteria. Sites adjacent to and below Interstate 780 are those most suitable for higher density development in general. Sites e, f and h are planned to contain a range of densities including nodes of higher density. These higher density nodes are planned to occur near the crossing of collector streets where neighborhood commercial and public facilities such as fire stations and schools will be located.

Site Information. Each of the areas identified on the Site Availability Map is listed in Table 25. Each area is evaluated as to type of housing that could be accommodated, the availability of public facilities and planning status.

RELATIONSHIP BETWEEN LAND USE DESIGNATION AND ZONING

<u>LO (up to 7 Units/Net Acre)</u>		<u>HI (12-32 Units/Net Acre)</u>	
R-S	0.2-7.3 Units/Gross Acre	R-M 2.5 Zone	17.4 Units/Gross Acre
		R-M 1.25	34.8
<u>MED (8-12 Units/Net Acre)</u>			
R-D Zone	8-14.5 Units/Gross Acre		
R-M 2.5	8-12		

TABLE: H-25 HOUSING SITE INFORMATION

LOCATION	APPROXIMATE LAND RESOURCE	HOUSING TYPE AND DENSITY ¹	CONSTRAINTS ²	ESTIMATED UNIT YIELD
LONG TERM RESOURCES (LETTERS REFER TO MAP H-4)				
a. Sky Valley Area	1,000 Acres	LO	A,U,P	2,265
b. Central Hills	1,800 Acres	LO	A,U,P	3,930
c. Eastern Hills	1,500 Acres	LO	A,U,P	1,340
Subtotal				7,535
SHORT TERM RESOURCES (LETTERS REFER TO MAP H-4)				
e. S of Lake Herman	185 Acres	LO, MED	U	550
f. SE of Lake Herman	40 Acres	LO	U	210
g. Southampton (NW)	520 Lots	LO	U	600
h. Southampton (NE)	125 Acres	LO, MED, HI	U	750
i. Southampton (S)	19 Acres	MED	-	225
-. Tract 2520.00	110 Lots	LO, MED, HI	-	110-440
-. Tract 2521.02	155 Lots	LO, MED, HI	-	155-620
m. Tract 2521.01	45 Acres	LO, MED, HI	P	350
- Mixed Use	192 Acres	HI	-	120
Subtotal				3,070
GRAND TOTAL				10,605

¹LO = Single Family, Mobile Homes, Manufactured (Up to 7 Units/Net Acre)
 MED = Attached Units, Mobile Homes, Multiples (8-12 Units/Net Acre)
 HI = Multiples (12-32 Units/Net Acre)

² A = Annexation Required
 U = Lack of Utilities/Facilities*
 P = Additional Planning Necessary**

* Utilities and streets are constructed by developers as part of their projects.

** Although the total number of potential units, when compared to the total land area, indicates a low average density, it is anticipated that some concentrations of higher density residential use will be accommodated at specific locations when detailed studies of such factors as topography, utility service, circulation and public safety is undertaken. This likelihood has been anticipated in the Northern Area Study.

2,265

a
↑
A

3,930

b
↑
A

1,340

c
↑
A

g

600

e

550

210

f

750

h

e

DRIVE

DRIVE

EAST 2nd STREET

STATE HIGHWAY 680

2521.01
2520.00

SOUTHAMPTON
225

DRIVE

INTERSTATE 780

55
m

30-120

WEST 7th STREET

K STREET

J STREET

25-100

WEST 1st STREET

WEST 2nd STREET

WEST 3rd STREET

WEST 4th STREET

WEST 5th STREET

WEST 6th STREET

WEST 7th STREET

WEST 8th STREET

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WEST 47th STREET

WEST 48th STREET

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HOUSING GOALS, POLICIES, OBJECTIVES AND IMPLEMENTATION PROGRAMS

Citizen Involvement

Citizen involvement in the preparation of the Benicia Housing Element was accomplished through the process of Planning Commission and City Council hearings.

Housing Goals

1. Promote the availability of affordable housing for all income groups in Benicia.
2. Promote the development of a wide variety of housing types and designs.
3. Give special consideration to the expansion of housing opportunities for elderly, handicapped and low-income persons.
4. Promote efforts to conserve and improve Benicia's existing housing supply.

General Strategy

Emphasis in the Benicia Housing Element is toward maximizing local incentives to help the private sector generate more housing. Over the next three to five years the City does not intend to seek outside grants that would require setting up a significant new local administrative function nor will significant additional responsibilities be placed on existing City personnel. Minimal direct involvement in providing affordable housing will be undertaken by existing City staff aided by outside consultants hired on a short term basis. Incentives to be used in promoting additional housing include the following specific items:

- a. Encourage private enterprise to continued construction of conventional housing.
- b. Undertake zoning ordinance revisions to streamline the development process, weed out unnecessary restrictions and introduce additional opportunities for housing development.
- c. Encourage parcelization of underutilized lots.
- d. Plan and fund water and sewer plant expansion on a timely basis so that housing production is not stalled by lack of sufficient facilities.

- e. Fund advance planning studies for all of Benicia's Sphere of Influence so that suitable long range residential land resources are well defined.

Benicia intends to utilize existing housing stock where possible to help satisfy lower income housing need. The Section 8 and Section 8 voucher programs, locally managed through the Benicia Housing Authority, will be supported. People with large units and underutilized space will be encouraged to participate in shared housing.

Priority of Action

The actions of local government aimed at promoting additional housing are prioritized as follows:

First Priority Actions

- . Actions taken to provide incentives to the private sector aimed at promoting additional housing.
- . Actions taken to support activities of the Benicia Housing Authority.

Second Priority Actions

- . Actions taken to directly assist local citizens in locating and retaining affordable housing.
- . Actions taken to directly encourage housing conservation and rehabilitation.

Review of Previous Housing Element

Since 1981 when the previous Housing Element was adopted, the City of Benicia has experienced continued, active housing development averaging over 400 units per year. Most of the units available for lower income households has come from the Section 8 and Senior Rental Housing Program. The units available to households with moderate and above moderate income are primarily merchant built units with the cost range extending from higher density apartment and condominium units at the lower cost end to large lot, single family detached homes at the upper cost end. Emphasis in the current element has been placed on facilitating more productivity from the Section 8 and Senior Rental Housing Programs, expanding the number of programs aimed at reducing the cost of merchant built housing and introducing programs for second unit and shared housing. The previous element projected a need for 1,928 units by 1985. The actual production of 2,530 units is shown in Tables H-13 and H-24.

Housing Action Plan

Although housing needs determinations and various projections included in this Housing Element cover the period 1980-1990, the five year action plan defined below is intended to be undertaken during the five year period from 1985 to 1990. Estimated program results are given for the ten year period, however review of the progress will be monitored regularly and another update of the Housing Element conducted within five years. The objectives, policies and programs below are designed to fit the stated goals. However, each of the action programs should be utilized when the opportunity arises and not just to achieve an individual goal. An estimate is given of City resources required to implement each program. In general the programs are intended to be implemented through the administration of land use and development controls and the provision of regulatory concessions and incentives.

GOAL I: Identify sites adequate to meet the anticipated future demand for housing which will be made available for housing through appropriate planning, zoning and development standards and that are capable of being served by public utilities and facilities.

OBJECTIVES (Goal I)

- A. Realize the construction of approximately 4,500 additional housing units in Benicia between 1980-1990 to provide for anticipated growth, demand from future local employment and desired mobility.
- B. Increase the available housing stock for each of the various household income groups in Benicia up to the number of units needed to satisfy the housing need determination provided by ABAG for the period 1980-1990. (See Table H-26)
- C. Maintain the ratio of multiple family dwellings (three or more units per lot) at about 30% of the housing stock.
- D. Work with developers, semi-public and non-profit groups to provide housing for approximately 50 large households (more than six person households) as part of the needs attainment.

POLICIES (Goal I)

- A. The City will work with other public agencies and private developers to determine the public utilities

and facilities that are needed for development and will assist in infrastructure improvements as appropriate.

- B. Within the limitations of the private housing market the City will work with developers to generate a wide variety of housing types and sizes to accommodate a broad range of income, family size and age groups.
- C. The Benicia City Council and staff will seek out innovative zoning regulations that are capable of providing additional affordable housing while maintaining scale, size and design compatible with community character.
- D. The Benicia City Council and staff will establish and maintain a regular system of monitoring the development and continued existence of affordable housing in Benicia to help in the review of development proposals and the periodic, required update of the Housing Element.

PROGRAMS (Goal I)

- A. Construction of Market Rate Housing. Exhibit 4, the Housing Site Availability Map, identifies locations and estimated numbers of units. Market rate housing can be built in each of these areas consistent with applied land use and zoning designations. The City staff, with Planning Commission and City Council support, will encourage a wide variety of housing types and sizes. Continued residential development, following current trends, will realize up to 3,500 new units between 1980-1990 that will be available to households with moderate or above moderate incomes. Timely review and processing of applications will help minimize unit costs and facilitate a desirable vacancy factor of about six percent.

Resource Commitment: Plan processing is a normal, ongoing function requiring no new procedures. (Ongoing)

Unit Generation
Estimate:

Estimated yield is 1,450
moderate and 1,950 above
moderate income units.

- B. Sphere of Influence Advance Planning. Long term land resources for housing, identified in Exhibit 4, include land in the vicinity of Lake Herman and land north of Lake Herman Road in Benicia's Sphere of Influence. Preliminary planning was accomplished in the Northern Area Study, completed in July, 1985. More extensive planning must be undertaken to establish specific land use areas, including residential sites, and to determine appropriate circulation and infrastructure requirements. The staff will prepare an acceptable scope of work which will be funded by City Council action. Work will be undertaken by staff and/or a planning consultant.

Resource Commitment: Planning staff time will be required to prepare a work scope. Funding will have to be appropriated for staff and/or consultant work. (1986)

Unit Generation
Estimate:

If close-in areas are annexed in the next five years, approximately 200 market rate units could be made available. However, the intent of this program is to prepare for long range housing development in subsequent five year programs.

- C. Expansion of Rental Housing. Until recently, new construction of rental housing has been limited due to interest rates and economics of development. Construction of new condominium buildings, however, adds to the rental market because experience shows approximately one-half of new condominium units are investor owned and rented. Rental housing projects and new condominium projects, in a wide range of prices and sizes, will be encouraged by staff with support of the Planning Commission and City Council.

Resource Commitment: Plan processing is a normal, ongoing function requiring no new procedures. (Ongoing)

Unit Generation
Estimate:

Included within Program I A above.

GOAL II: Assist in the development of housing to meet the needs of low and moderate income households.

OBJECTIVES (Goal II)

- A. Increase the available housing stock for very low, low and moderate income groups in Benicia up to the number of units needed to satisfy the housing need determination provided by ABAG for the period 1980-1990. (See Table H-26)
- B. Work with developers, semi-public and non-profit groups to provide more affordable housing as part of the needs attainment, for approximately 233 lower income owner and 702 lower income renter households that were estimated to be overpaying for housing in 1980. (See Tables H-21 and H-22).

POLICIES (Goal II)

- A. The City will encourage developers, semi-public and non-profit groups to provide housing for lower income households.
- B. The City will encourage efforts of the Benicia Housing Authority to expand the number of lower income units maintained in Benicia.
- C. Lower income units will be distributed and located throughout the City on a first-come, first-served basis, where transportation, shopping and other necessities are convenient, in order to avoid concentrations of below market units in excess of 10% of all units in any one census tract.
- D. The City will encourage mixed residential and commercial uses in the community core as a means of providing more affordable housing near transportation, jobs and shopping.
- E. The City will allow the use or construction of a second dwelling unit in conjunction with a single family home upon issuance of a Conditional Use Permit.
- F. The City will allow the use of substandard lots on scattered sites throughout the City for affordable single family units.

- G. When legal mechanisms are established to assure continued long-term use of the development for the elderly, the City will encourage development and expansion of housing opportunities for the elderly through use of incentives established in the Zoning Ordinance, such as: smaller allowable unit sizes; parking reduction; common dining facilities; and fewer, but adequate amenities.
- H. Where possible the City will give first priority to project review and permit processing for projects providing affordable housing and especially for those accommodating lower income households with special needs including elderly, handicapped and large family households.
- I. The City will encourage the use of appropriate state and federal funding programs including the Federal Section 8 program and the state Senior Rental Housing Construction Program as their replacements to generate additional lower income units.
- J. The City will encourage the use of density bonus provisions allowed by Government Code Section 65915 whereby developers who set aside 25% of the units in a development for lower income households are able to increase the overall project density by 25%.

PROGRAMS (Goal II)

- A. No Frills Housing. Since World War II Americans have become accustomed to various amenities within a home. In recent years, with new technology and changing lifestyles, there is both the ability to create basic necessities within a home at reasonable cost and to incorporate unnecessary, sometimes wasteful amenities. No frills housing includes an all purpose room, necessary bedrooms, kitchen with sink, stove and refrigerator; bath with sink, shower or tub and toilet; necessary floor and window coverings; and, a carport or uncovered parking area for cars. The intent is that amenities can be added as the owner is able to afford them over time. No frills housing must meet minimum building and safety code requirements but should be easy to adapt for handicapped access. City staff, with support from the Planning Commission and City Council, will encourage developers to design no frills housing for sites where affordable housing can be accommodated.

Resource Commitment: Preliminary discussions between staff and project proponents, and plan processing once applications are filed are ongoing functions, however commitment to advocating this program will have to be made. (Ongoing)

Unit Generation
Estimate: 150 lower income units.

- B. Second Housing Units. This program involves the legalization of second housing units when provided in conjunction with a single family residence. A second unit is defined as a detached or attached living unit that provides complete, independent living facilities for one or more persons. It includes provisions for living, sleeping, cooking and sanitation on the same parcel as the main residence. The City will amend its Zoning Ordinance to allow second units providing such units meet specific standards including safety codes, size of unit, off-street parking and appropriate design criteria.

Resource Commitment: Staff time will be required to prepare ordinance amendments unless this revisions is included in an overall Zoning Ordinance update (See program under Goal III). (1986)

Unit Generation
Estimate: 200 lower income units.

- C. Density Bonus: The City will incorporate the State mandated bonus provisions and will seek to develop bonus provisions applicable to projects between the 25% State factor and existing 10% City provision.

Resource Commitment: Staff time for ordinance amendments unless included in Goal III Zoning Ordinance update program. (1986)

Unit Generation
Estimate: Included in other programs.

- D. Mixed Use Provisions. This is an ongoing program. Sections of the Zoning Ordinance pertaining to commercial and office development were revised to permit residential uses on the same site secondary to established commercial or office use. One bedroom units are allowed at the rate of one unit for each 1,000 square feet of lot area and two bedroom units at the rate of one unit for 1,500 square feet of lot area. Staff is responsible for working with project proponents to insure that such units are above commercial space or otherwise located on commercial sites so as to be secondary to the commercial use. Residential uses can only be developed along with or following a commercial use.

Resource Commitment: Preliminary discussions between staff and project proponents, and plan processing once applications are filed are ongoing functions. (Ongoing)

Unit Generation
Potential: 120 lower income units.

- E. Federal Section 8 Housing. Support for this program or its replacement is an existing City policy. Under this program, provided by the Department of Housing and Community Development (HUD), existing and new rental units can be made affordable to lower income households. Emphasis is on assistance to very low income households. The difference between market rate rents and what a family can pay (at 25% of gross income) is paid to the landlord by the program funds. The units can be managed by Benicia's existing Housing Authority.

Resource Commitment: Allocation of funds to a community is dependent on HUD criteria and local interest. The Housing Authority assists sponsors in applying. Staff review of new rental projects is an ongoing function. (Ongoing)

Unit Generation
Estimate: Utilize 325 existing or new units for lower income households.

- F. California Rental Housing Construction. Support for this program or its replacement is an existing City policy. Under this program, development funds are provided to private, non-profit sponsors of new rental units. Emphasis is on housing for very low income senior citizens. The Benicia Housing Authority cannot be a sponsor without local ballot support, however the Authority can participate as an ongoing management agent.

Resource Commitment: Allocation of funds is dependent on HCD criteria and local interest. The Housing Authority assists sponsors. Staff review of new rental projects is an ongoing function. (Ongoing)

Unit Generation
Estimate:

Develop 100 new lower income units.

- G. Shared Housing. This program would be sponsored by a non-profit organization which arranges for the placement of seniors, students and others needing housing with individuals who have housing available and wish to accept a boarder. A placement office would maintain a list of both those people who have available space and those who need to rent or otherwise obtain housing in the community. The City currently supports the Benicia Community Action Center (CAC) which provides limited emergency housing. An evaluation will have to be made to determine if the placement office should be a function of the CAC, an extension of the Housing Authority, at City Hall or in another location.

Resource Commitment: Staff time or limited consultant funding will have to be committed to determine the best location for the housing referral function. City participation in ongoing funding of office space, telephone, publicity and staff will have to be committed. (1987)

Unit Generation
Estimate:

210 very low and 100 low rentals within existing units.

- H. Mobile Home and Manufactured Housing Provisions. Factory built housing can generally be priced below the cost of conventional construction yet is an underutilized source of lower income housing in Benicia. Zoning Ordinance revisions will be undertaken to allow mobile home parks in any residentially designated area of the General Plan subject, in each case, to designation criteria related to location, size, shape and topography of the site. Individual mobile homes and manufactured housing units are allowed to be placed on permanent foundations on single family zoned lots subject, in each case, to appropriate design restrictions applicable to single family homes. Building and Safety Code regulations have to be met in all cases. The special character of the Central Historic District and Benicia Waterfront will be recognized by restricting the placement of units in these areas.

Resource Commitment: Staff time will be required to prepare ordinance amendments unless these revisions are included in an overall Zoning Ordinance update (See program under Goal III). (1986)

Unit Generation
Estimate:

150 very low and 110 low
income units.

- I. Use of Substandard Lots. Through this program the City will allow development of affordable housing on lots which do not meet the minimum lot area or dimensional requirements of the Zoning Ordinance at scattered sites which are zoned for residential use. Variances will be granted where appropriate. This program shall apply to existing lots and lots that may be created by the abandonment of public rights-of-way. Development criteria will include program applicability only to units which are priced for low or very low income households. Parking requirements, building setbacks and the number of units allowed will be subject to review which may include a use permit or architectural permit procedure.

Resource Commitment: Staff time is required for project review and evaluation as applications are filed. A suitable method will have to be devised for insuring the continuing availability of approved units to households with low or very low incomes if this procedure is not established with another program. (Ongoing)

Unit Generation
Estimate: 10 very low and 20 low income units.

- J. Affordability Guarantee. Through appropriate controls, developers shall be required to take adequate steps to ensure that lower income units remain affordable and available to lower income households for the life of the units. These provisions already apply to conventional low income, Section 8, and Senior rental housing units managed by the Housing Authority as these are all government assisted programs. For non-assisted units, consideration will be given to having the Housing Authority also manage these units with responsibility for resale price and rental rate controls. Developers would be required to apply for available rental assistance programs.

Resource Commitment: Staff time or that of a consultant will be required to work out the procedures for affordability guarantee. (1987)

Unit Generation
Estimate: Applicable to other programs.

GOAL III: Address and Remove Governmental Constraints to Housing

OBJECTIVES (Goal III)

- A. Facilitate the future availability of sites for anticipated housing expansion.
- B. Facilitate the future availability of public utilities and infrastructure to accommodate anticipated housing expansion.
- C. Streamline the zoning procedures and remove unnecessary restrictions related to housing development.

POLICIES (Goal III)

- A. The City will fund advance planning for all of Benicia's Sphere of Influence and other justified specific study areas that may be identified.
- B. The City will fund a complete revision of the Zoning and Subdivision Ordinances.
- C. The City will fund studies, to plan for and identify the appropriate timing of the expansion of water supply and sewage treatment facilities for Benicia.
- D. Although most road and utility improvements will be made as part of future developments, the City will consider use of assessment districts to facilitate the development of infrastructure when requested by interested landowners.

PROGRAMS (Goal III)

- A. Zoning and Subdivision Ordinance Update. Through this program the City will update these ordinances and ensure consistency between them. Various programs of the Housing Element that call for ordinance revisions will be incorporated. Through this program the Zoning Ordinance procedures will be streamlined and unnecessary restrictions removed. At the time the revised Zoning Ordinance is adopted special publicity will be promoted through the newspaper regarding provisions such as the mixed-use and second unit programs. Thereafter the Planning Department will provide information sheets to help encourage use of new housing programs.

Resource Commitment: Planning staff time was required to prepare a work scope. Funding has been appropriated for staff and/or consultant work. (1986)

Unit Generation
Potential: Applicable to other programs.

GOAL IV: Conserve and improve Benicia's existing affordable housing stock.

OBJECTIVES (Goal IV)

- A. Encourage the rehabilitation of approximately 50 units in areas identified on Exhibit 3, the Housing Conditions Map.
- B. Conserve existing structures which provide housing for low and moderate income households.
- C. Promote the improvement, maintenance and enhancement of the existing housing stock through ongoing private remodeling efforts.
- D. Expand housing opportunities for lower income households by using existing housing stock where applicable.

POLICIES (Goal IV)

- A. The City will allow the use of second units in existing single family districts as a means of expanding the use of existing housing stock.
- B. The City will encourage the use of shared housing to take advantage of underutilized space.
- C. The City will encourage the use of the federal Section 8 program to assist lower income households in renting existing housing stock.
- D. The City will discourage the conversion of existing rental units to condominiums when vacancy rates are low.
- E. The City will encourage the retention of structures which provide housing for lower income households.

- F. The City will promote the conservation and improvement of the condition of existing housing stock, and encourage remodeling and expansion efforts by homeowners.

PROGRAMS (Goal IV)

- A. Housing Conservation and Rehabilitation. An individual consultant or firm will be utilized on a limited basis to promote a self-motivated neighborhood rehabilitation program. Alternatively, a self-funded neighborhood assistance organization will be involved. Under this approach a target area will be defined and all property owners, regardless of income group, encouraged to perform selected exterior and interior improvements. This program would help ensure that the existing housing stock remain viable.

Resource Commitment: General Fund expense will be controlled by the City Council. Minimal staff time is required to help select a consultant and outline a contract. (1988)

Estimated Program
Results:

Rehabilitation of 50 units;
upgrade of 200 units.

- B. Remodeling and Other Improvements. Considerable remodeling and expansion of existing housing units within the community has occurred over the past decade. This trend is expected to continue and provide Benicia residents with a means of improving their housing opportunities without acquiring new housing. The action involves City encouragement of the remodeling and improvement of existing units.

Resource Commitment: Review and approval of building improvement plans is an ongoing responsibility of the Building Department. (Ongoing)

Estimated Program
Results:

Building Department records indicate that from 200 to 300 residential units are altered or repaired each year.

- C. Energy Conservation. By this program the City will recommend and promote energy conservation in existing and new housing. Although efforts to promote active solar systems are negatively affected by elimination of tax incentives, the City Building Department will ensure that basic energy requirements are achieved in building construction and, in addition, will inform building permit applicants of available energy saving appliances and passive solar applications where feasible.

Resource Commitment: City staff reviews plans and advises permit applicants as a normal activity. (Ongoing)

Estimated Program
Results:

All new units will be affected.

- D. Selected Use of Revenue and Taxation Code. Section 17299 of the Revenue and Taxation Code can be used to deny income tax deductions to owners of substandard rental property if health and safety hazards persist. The City will use these provisions as a last resort to ensure proper maintenance of rental housing stock.

Resource Commitment: Staff time is required to contact owners and request that improvements be made to noticeably substandard properties or when complaints are filed. Staff time is required to prepare findings for City action and filing under these Code provisions.
(Ongoing)

Estimated Program
Results:

No estimate is possible.

GOAL V: Promote housing opportunities for all persons in Benicia

OBJECTIVES (Goal V)

- A. Eliminate, to the extent feasible through City actions, discrimination in housing.
- B. Promote housing opportunities for all persons regardless of race, sex, marital status, ancestry, age, national origin or color.
- C. Give special consideration to the expansion of housing opportunities for elderly, handicapped and lower income households.

POLICIES (Goal V)

- A. The City will adopt appropriate ordinances to resist housing discrimination.
- B. The City will enforce those provisions of the Uniform Building Code which require handicapped access and facilities in multiple family residential structures and will recommend adjustments to single family plans that will facilitate handicapped access.

PROGRAMS (Goal V)

- A. Promote Non-Discrimination. By this program the City will inventory and review existing ordinances in other cities to determine applicability and likely success in Benicia. Emphasis will be given to the adoption of an ordinance making it illegal to discriminate against families with children in rental housing. Exceptions will be considered for those project designed exclusively for adult tenants.

Resource Commitment: Planning staff time will be required to research ordinances and to prepare recommendations for a local ordinance. Alternately, an outside consultant will be utilized with payment from the City General Fund. (1988)

Estimated Program
Results:

No estimate is possible.

- B. Support of Non-Discrimination in Housing. The City supports the concept of non-discrimination in housing. While the City does not have the resources to actively enforce non-discriminatory housing laws, persons requesting information or assistance relative to Fair Housing discrimination complaints will be referred to the County and provided with State and Federal printed information concerning Fair Housing Law, rights and remedies available to those who believe they have been victims of discrimination (Ongoing).
- C. Grantsman Function. A consultant will be hired on a limited basis using General Fund resources to assist the City in determining the availability of grants for housing related activities and to help prepare grant applications. Investigation will include applicability of Mortgage Revenue Bonds, for instance.

Resource Commitment: General fund expense will be controlled by the City Council. Minimal staff time is required to help select a consultant and to outline a contract (1988).

Estimated Program
Results:

No estimate of new units is possible. This program would best be used in conjunction with a commitment to pursue a particular type of grant such as the Community Development Block Grant.

- D. Maintain Up to Date Housing Records. Maintenance of housing related records is an ongoing function in several city departments. This program is aimed at providing a regularly updated record with information easily collected and compiled for a variety of uses and particularly aimed at an up-to-date record of housing needs attainment (1986-87).
1. Maintenance of construction activity records is an ongoing program of the Building Department. A monthly record of building permits by unit type (single or multiple) is kept and an annual

summary of condominium units and mobile home units is available. These will be kept as computerized records and will include census tract, structure type, and number of units by number of bedrooms and date. All building permit applications will be referred to planning for a check on zoning consistency and to determine estimated rental rate or sales price.

2. A master list of total housing units and estimated population citywide will continue to be maintained by the Building/Planning Office and updated annually using the monthly Building Department records. The Planning staff will record estimated rental rate or sales price.

The Planning staff will maintain the list of housing needs taken from the General Plan Housing Element and provide an up-to-date record of needs attainment for use by the Planning Commission and City Council in reviewing new development proposals. The Planning Department will request information on anticipated rent schedules and sales prices from project proponents to facilitate the needs attainment determination. Current HUD income schedules will be used to establish median income for comparison with project rental and/or sales information.

3. Population estimates are forwarded to the City Finance Office from the State Department of Finance. These figures will be forwarded to the Planning Office for incorporation into population projections.

TABLE: H-26 SUMMARY OF ESTIMATED PROGRAM RESULTS

PROGRAM	UNITS GENERATED BY INCOME GROUP 1980-1990				
	Very Low	Low	Above Moderate	Moderate	Total*
Market Rate Housing			1,450	1,950	3,400
Sphere of Influence Plan					
No Frills Housing		150			150
Second Units	75	125			200
Mixed Use Units	30	90			120
Section 8 Housing	(300)	(25)			(325)
Senior Rental Housing	90	10			100
Shared Housing	210	100			310
Manufactured Units	150	110			260
Substandard Lots	10	20			30
Subtotal New Units	865	630	1,450	1,950	4,895
GRAND TOTAL NEW ADDITIONS					4,570
Need Determination (ABAG 1980-1990)	864	628	864	1,571	3,927
Housing Rehabilitation: Rehabilitate 50 units; upgrade 200 units.					
Housing Remodel: Alter and/or repair 2,000 units.					

* Section 8 units are excluded from the grand total of new units since it is anticipated that these units will be created by utilization of existing stock.

OPEN SPACE ELEMENT

T A B L E O F C O N T E N T S

PURPOSE	OS-1
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OPEN SPACE PLANNING FACTORS	
Preservation of Natural Resources	OS-1
Managed Production of Resources	OS-2
Outdoor Recreation	OS-2
Public Health and Safety	OS-2
Structure for Urban Development	OS-3
CONCLUSIONS FROM OPEN SPACE ANALYSIS	
The Shoreline	OS-3
The Hills	OS-4
Urban Open Space	OS-4
BOUNDARY HILLS	OS-4
RESIDENTIAL USES IN SKY VALLEY	OS-5
THE VIEW HILL PARK	OS-5
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OPEN SPACE ELEMENT

Purpose

The intent of the Open Space Element is to identify those elements of the physical terrain, vegetation and general setting which are natural determinants of community form, to identify areas which should be avoided by development in order to provide for management of environmental resources or because of potential geologic hazard, and to investigate the use of open space for recreational purposes.

Relation to Other Elements

The Open Space Element is primarily related to the Conservation and Seismic Safety Elements and to the Recreation section of the Land Use Element.

Open Space and the General Plan

Benicia has an obligation to protect and enhance its environmental heritage for future generations to enjoy. Growth and development should be compatible with the natural environment, in general, and subordinate to specific, major features which may be defined. With future development, loss of open hills and grazing land must be expected. However, as each new area of development is viewed, consideration must be given to the review of ecologic, aesthetic and geologic conditions present.

Benicia has three principal components: 1) the shoreline; 2) urban areas; and, 3) the hills. Open space is used in the General Plan to structure the present and future community, to link certain areas of development and to separate others. The determination of which land is most suitable for open space use results from the analysis of the following planning factors.

Open Space Planning Factors

Open Space refers to both used and unused land. The various open space factors considered most pertinent to the Benicia environment are discussed below and mapped on the Open Space/Conservation Map.

Open Space for the Preservation of Natural Resources

1. Benicia's major asset is its water orientation. The significant fish and wildlife habitat of the salt water system touching the waterfront is a major natural resource to be preserved. A major reference is the Special Area Plan applicable to the waterfront, which is an appendix to the General Plan.
2. A second major asset are the various promontories and ridges which stand out from the gentle rolling hills forming the backdrop

to Benicia. The 'view hill' and boundary hills are notable geologic features. The unique rocky ridges along the south side of Lake Herman Road beyond the west end of Lake Herman should be preserved. Consideration should be given in the future, if this area is annexed, to permanently preserving these ridges as an extension of the Lake Herman Park.

Open Space for the Managed Production of Resources

1. Areas vital to fish and wildlife production along the shoreline are most notably the two marsh and mudflat habitats which bracket the Benicia waterfront. To the west is the Southampton Marsh; to the northeast is the extensive Suisun Bay Marsh Preserve. These areas should be protected from direct encroachment by development.
2. Rangeland for livestock grazing extends north of Lake Herman Road into Sky Valley and through the hills comprising Benicia's watershed. The area north of Lake Herman Road is geologically less desirable than land to the south for construction purposes due to the presence of active earthquake fault traces and relatively high landslide potential. Residential development in the upper part of Sky Valley and industrial development north of Lake Herman Road should occur only after available sites to the south are used up.

Open Space for Outdoor Recreation

1. Urban areas of historic importance such as the Clock Tower Fortress and Commandant's House provide an opportunity to create interesting places for community gathering and activity. Continued City involvement in the enhancement of this area for an historic park overlooking the maritime activities of Benicia's port is anticipated. Other small parks such as the St. Paul's Plaza and the Benicia State Capitol instill community pride.
2. Water oriented recreation areas for scenic enjoyment and for activities such as fishing and boating are important open space factors. The Benicia marina, when completed, will provide a major salt water recreation center. The potential to create a major fresh water recreational center exists at Lake Herman.
3. Urban park and recreation facilities have been established throughout the community. Benicia enjoys a major public swim facility, baseball parks and small neighborhood parks. The Recreation Section of the Land Use Element discusses urban park and recreation facilities in detail.

Open Space for Public Health and Safety

1. Major natural watercourses are identified and mapped in Benicia. These should be avoided by development in order to protect against

water pollution and flood danger while retaining the natural appearance of the drainageways. Several significant ravines and streambeds should be protected. These include the ravine northeast of Columbus Parkway, the ravines oriented east from the 'view hill' and the streambeds associated with Pine Lake, Paddy Lake and Lake Herman.

2. Steep hillsides have been identified at various locations in the Plan Area. These should be avoided by development because of the potential erosion hazard, increased earth moving requirements and, in some instances, because the steep slopes help define boundaries to the community or to development areas within the community.
3. Earthquake fault zones and areas underlain by bay mud present pronounced seismic hazards and thus should be avoided as locations for critical public buildings or for facilities where damage during an earthquake could result in considerable loss of life or property damage. These areas are discussed in detail in the Seismic Safety Element.

Open Space to Structure Urban Development

1. Land forms which form gateways or delineating boundaries to the City are a central concept in the Benicia Plan. These are discussed in detail in the Scenic Highways Element.
2. Open Space corridors are capable of separating nearby development areas while at the same time providing a convenient location for paths linking schools, parks and convenience commercial centers to residential neighborhoods. Several ravines and stream corridors have been identified.

Conclusions From Open Space Analysis

The Shoreline: Summary of Findings. Water orientation is Benicia's most valuable asset. The historic layout of streets, consisting of a uniform grid pattern, was superimposed upon the irregular shoreline and extended out into the water. Major opportunities for public waterfront access thus exist at the ends of these streets where they end, on land, at the shore. These conditions exist generally between the marina and Benicia State Park. To the east of the marina, important shipping facilities and a successful industrial park exist. Marsh and tidal flats, vital to the production of fish and as a wildlife corridor for shorebirds, exist in Southampton Bay to the west and in Suisun Bay northeast of the City. The railroad right-of-way which runs along the upland edge of the Suisun Marsh provides a convenient protective barrier for these intertidal habitats.

The Hills: Summary of Findings. Gently rolling, grass covered hills extend beyond the presently urbanized portion of Benicia. This rangeland has soil limitations which prevent extensive agricultural use and also limits the habitat necessary to support varied or abundant natural wildlife. There are few concentrations of woody vegetation, lakebeds or notable rock outcroppings to distinguish one part from another, yet the topographical variation provides many surprises. To the west and east of Central Benicia, the hills touch close to the shoreline, thus screening the major vehicular approaches to the City. Historic quarries and new industrial park uses are often hidden from the casual observer; unsightly uses which are incompatible with the desire to create a true industrial park can be landscaped or otherwise treated for visual acceptability. A precedent has been set for planting by the pines and cypress in the vicinity of Pine Lake. New residential development north of Highway 780 has occurred primarily on the lower slopes and in these canyons which do not contain major watercourses. Urban development has generally spared the steep, upper slopes where problems of major land alteration and associated erosion and sedimentation are more likely to occur.

Urban Open Space: Summary of Findings. There are still tracts of open land between the shoreline and Highway 780. Some open space land surrounds important historic buildings and places such as the Benicia Capitol and the Arsenal (Industrial Park) Headquarters, some is used for play areas by children; still other land is simply undeveloped. At present, many community parks are concentrated in Central Benicia near City Hall. Opportunities exist to acquire or set aside small neighborhood park and recreation sites in the future. A detailed discussion of urban park and recreation resources is contained in the Recreation Section of the Land Use Element.

Open Space Separators: The Boundary Hills

One of the most unanimous community goals is to maintain Benicia's separate identity by maintaining a permanent visual and physical separation from Vallejo. The plan proposes that steep hillsides and ridges at the western edge of the Plan Area be kept open. This is detailed in the Scenic Highways Element Map. The boundary hills begin at Dillon Point on Southampton Bay and extend in a northerly direction, incorporating the City gateway on Lake Herman Road and containing the upper end of Sky Valley which is part of the Benicia watershed. The City should work to minimize the amount of development which is likely to creep over the ridgetops from the west along the hills above Benicia State Park to insure that development does not spoil the ridge profile. The critical area, with respect to the public's view from the road is detailed in the Scenic Highways Element and Map. The City should aggressively seek to adjust its Sphere of Influence boundary here as well as in the northern limits of the Benicia watershed through Sky Valley by working with the

Local Agency Formation Commission (LAFCO) at the County.

Continued preservation of the boundary hill 'buffer zone' north of Highway 780 is particularly important to the maintenance of Benicia's separate identity. This southwestern gateway to the City is the most crucial of the four identified in the Plan both from the standpoint of preserving the visual break between Benicia and Vallejo and from the standpoint of retaining the experience of entering Benicia. A portion of the lower slopes is visible for a great distance and should be kept open.

Residential Uses in Sky Valley

Rangeland north of Lake Herman Road provides a pleasant rural character close by to the developed areas of Benicia. The Sky Valley area, in particular, is more accessible than the other, more rugged terrain and thus more susceptible to development. The valley is presently remote due to lack of improved roads. Due to geologic conditions and because the valley comprises the watershed for Lake Herman, dense development is not appropriate. Future residential development in the upper reaches of Sky Valley should continue to be part of the rural experience with individual small ranches and carefully designed clusters of houses resulting in a density of no more than one dwelling per 10 gross acres.

The 'View Hill' Park

At the center of the ridge of hills which faces the Carquinez Strait above Central Benicia is a steep and highly visible promontory. This promontory is easy to identify because of the watertank and television relay tower which are located at the summit. The importance of this hilltop should be emphasized by naming it 'the view hill' and creating a hilltop park at this location. The view hill provides a 360 degree view over the entire existing and future community and to the water. A small parking area and turnaround should be provided in addition to a small outdoor structure to protect pedestrians from the frequent winds. Parking areas should be set back from the edge and landscaped so that automobiles are not highly visible from below. Landscaping should also be used to minimize the prominence of all the utility tanks and towers on the hill.

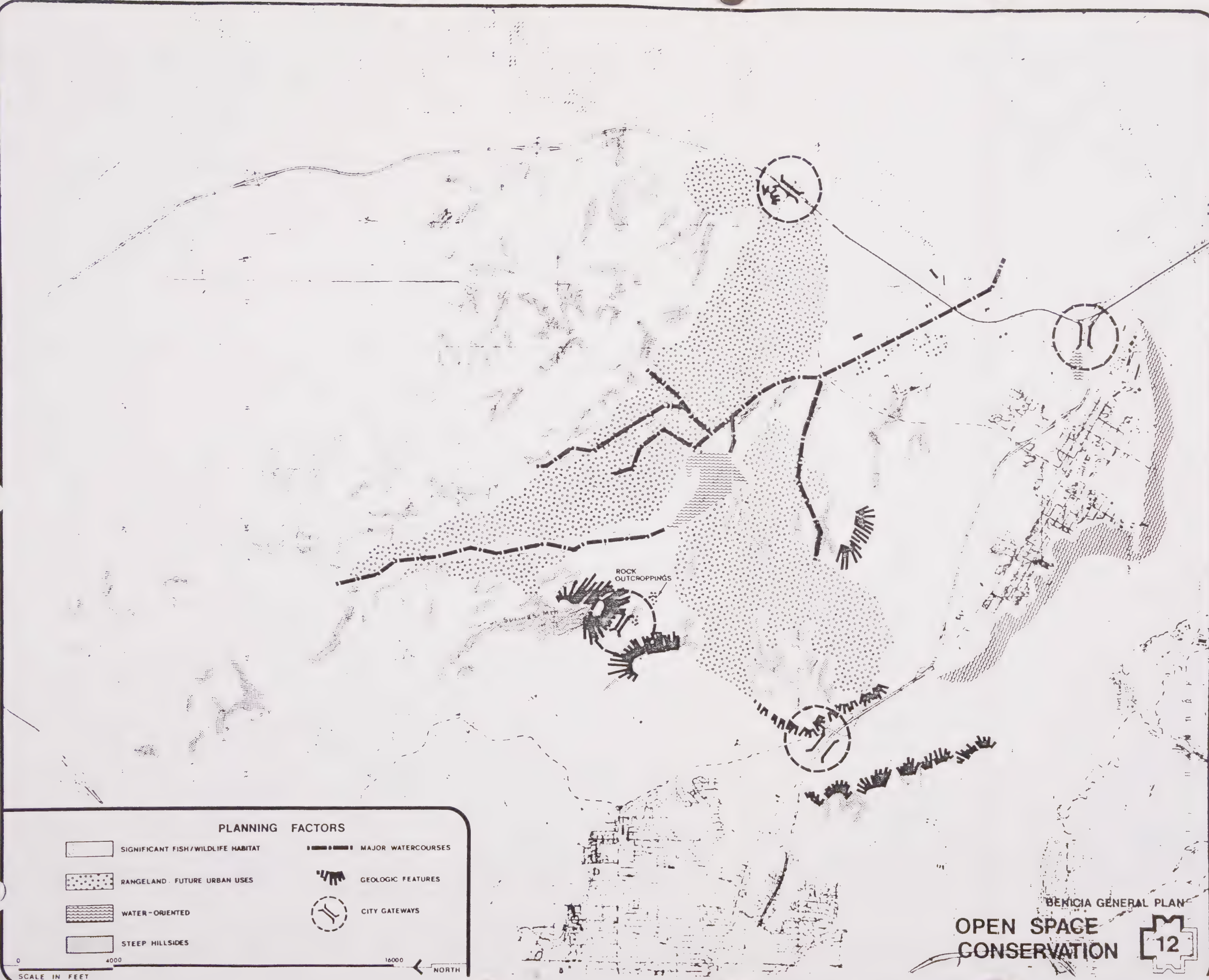
OPEN SPACE ELEMENT POLICIES AND PROGRAMS

Open Space Policies








The policies set forth on the next page are intended to help guide decision making with regard to open space in Benicia.

Open Space Element Implementation Programs. Follows policies statements.

OPEN SPACE ELEMENT POLICY STATEMENTS	RELATION TO GENERAL PLAN ELEMENTS											
	LAND USE					OTHER ELEMENTS						
	RESIDENTIAL	COMMERCIAL / INDUS	PUBLIC FACILITIES	RECREATIONAL	HISTORIC	CIRCULATION/ TRANSPORTATION	HOUSING	CONSERVATION/ OPEN SPACE	SEISMIC SAFETY	NOISE	SCENIC HIGHWAYS	COMMUNITY SAFETY
1. The City should maintain a visual and physical separation from Vallejo by protecting its boundary ridges and by keeping its western gateway clear of visible development through the subdivision process.								■				
2. The City should actively work with LAFCO and Vallejo to enlarge Benicia's Sphere of Influence to protect major east facing slopes above Benicia State Park from encroachment by visible development.								■				
3. Open land north of Lake Herman Road should be generally avoided by development in order to preserve rangeland. Some sparse residential uses in Sky Valley may be considered.	■							■				
4. The City should control uses of land at each of the four city gateways and should enhance these gateways to strengthen Benicia's identity.								■			■	
5. The City should preserve the Lake Herman area as a major recreational potential and scenic asset including nearby rock outcroppings and creekside vegetation; Lake Herman should be developed as a community park.				■				■				
6. The City should preserve physical separation from the west by creating no additional access roads through the boundary hills between 780 and Lake Herman Road.						■		■				



PLANNING FACTORS

- | | | | |
|---|-----------------------------------|---|--------------------|
|  | SIGNIFICANT FISH/WILDLIFE HABITAT |  | MAJOR WATERCOURSES |
|  | RANGELAND: FUTURE URBAN USES |  | GEOLOGIC FEATURES |
|  | WATER-ORIENTED |  | CITY GATEWAYS |
|  | STEEP HILLSIDES | | |

0 4000
SCALE IN FEET

16000 NORTH

BENICIA GENERAL PLAN
OPEN SPACE
CONSERVATION

Programs for Open Space Element Implementation

Below are listed the various programs by which the City will implement the Open Space Element. Reference is made as whether the program is existing or proposed, the responsibility for its operation and the policies that are affected.

California Environmental Quality Act (CEQA) Environmental Review Procedures. For all development projects a balance between land to be developed and land to be left open is desired. The effects of development on major open space elements is reviewed. (Existing)

Responsibilities

- City Planner - Prepares initial study; coordinates review process.
- Environmental Review Committee - Determines reporting requirements.
- Interested Citizens - Provide input regarding report adequacy.
- Planning Commission - Recommending body.
- City Council - Decision making body; certifies report.

Policies Affected

Open Space policies 1,3,4,5 and 6.

Zoning Ordinance. Sets forth minimum spatial, intensity and performance requirements for land to be developed consistent with the broader goals and policies of the General Plan. A 'public control' district should be added to the zoning designations to be applied to park lands and to dedicated open space lands. The district would recognize land which is used and should continue to be set aside in the future for civic facilities and public uses and would include particularly important open space reserves for scenic, cultural or recreational purposes. (Existing program - amendment recommended).

Responsibilities

- City Planner - Evaluation of proposals per standards; coordinates the review process; would draft amended regulations.
- Department Heads - Comment on proposals; suggest conditions of project approval; provide input to draft regulations.
- Interested Citizens - Provide input regarding suitability of open space lands; provide input to draft regulations.

Planning Commission - Recommending body.

City Council - Decision making body; approves or denies proposals, with or without conditions, based on findings set forth on the ordinance; adopts ordinance amendments.

Policies Affected

Open Space policies 1,3,4,5 and 6.

Subdivision Ordinance. Sets forth minimum standards for land divisions, access and utility service. Approval of subdivision maps requires a finding that the proposal is in conformance with the General Plan (Existing).

Responsibilities

City Planner - Reviews tentative and final subdivision maps; coordinates the review process.

Department Heads - Comment on development proposals; suggest conditions of approval.

Interested Citizens - Provide input regarding suitability of project.

Planning Commission - Decision making body; recommends, approves, or City Council denies subdivision, with or without conditions, based on findings set forth on the ordinance.

Affected Policies

Open Space Policies 1,3,4,5 and 6.

Parkland Dedication Ordinance. See Land Use Element Programs for Urban Open Space Used for Recreation Purposes.

LAFCO Communications. Normal City communications with the Local Agency Formation Commission should continue to implement policy 2.

CONSERVATION ELEMENT

T A B L E O F C O N T E N T S

PURPOSE	CO-1
RELATION TO OTHER ELEMENTS	CO-1
CLIMATIC CONDITIONS	
Wind	CO-1
Fog	CO-1
Rainfall	CO-1
Temperature	CO-2
Air Quality	CO-2
WILDLIFE HABITAT	CO-3
ARCHEOLOGICAL FACTORS	CO-5
HISTORIC STREET SYSTEM	CO-6
MINERAL RESOURCES	
Soils	CO-6
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OPEN SPACE/CONSERVATION MAP	CO-7
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Programs	CO-11
INDEX TO CHARTS AND TABLES	
Rainfall by Month	CO-2
Pollutant Emissions	CO-3
Rare and Endangered Species	CO-4,5
Energy Required for Development	CO-8

CONSERVATION ELEMENT

Purpose

The intent of the Conservation Element is to describe non-renewable natural resources available to Benicia residents and to identify appropriate methods for the preservation, maintenance, development and use of such resources. Included topics are air quality, water quality, wildlife habitat and mineral resources.

Relation to Other Elements

The Conservation Element is primarily related to the Open Space, Seismic Safety and Land Use Elements.

Climatic Conditions

Wind. Benicia is subject to relatively strong winds which funnel through the natural break in the coastal ranges at the Carquinez Strait. Prevailing winds are from the west although weather changes associated with flows of cold air from the Sierras during December and January cause infrequent winds from the east. These eastern winds are the most critical from the standpoint of potential wave damage to Benicia's marina facilities. The importance of the prevailing wind, which averages about 10 miles per hour during the year, is that objectionable odors and particulates which may originate in Benicia's industrial area, are diffused and carried away from residential areas. Wind is also capable of producing significant decreases in noise levels in the community by its masking effects. Recreational sailing on the Carquinez Strait is, of course, a benefit of the winds. Thus, there are important trade-offs between the nuisance effects of wind and the environmental advantages to the community.

Fog. The same break in the coastal ranges which funnels wind into the interior of California past Benicia also permits fog to penetrate. The cooling effects of fog are most prevalent during the winter months when, according to U.S. Coast Guard data, fog may occur nearly 10 percent of the time.

Rainfall. Benicia's location on the Carquinez Strait also affects the amount of rainfall. Annual rainfall is relatively low in Benicia as compared with other Bay Area communities. The annual average is only about 18 inches between October and April (the wet season) while places like Oakland, in the central Bay Area, receive an annual average of about 24 inches. This is due to the fact that moisture laden air from the ocean is not trapped against Benicia's hills as it is against those which are parallel to the coast. The coastal hills cause this air to rise to higher, cooler elevations. The effect of cooling is to force the moisture to be released. Climatological data collected at the

Martinez Fire Station over a period of 27 years indicates the following:

RAINFALL	MONTH												ANNUAL
	J	F	M	A	M	J	J	A	S	O	N	D	
Maximum	9.7	7.8	5.6	6.1	2.5	1.1	0.1	0.2	1.3	9.2	5.0	12.9	27.39
Minimum	0.9	0.0	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	9.9
Average	4.0	3.1	2.5	1.4	0.4	0.1	0.0	0.0	0.1	1.0	1.8	3.5	18.14

Temperature. Air temperature is moderated by the wind moving through the Carquinez Strait from the Bay. Benicia's winter temperatures are warmer than places farther inland and its summer temperatures are slightly cooler. Average winter temperature is about 51 degrees. Spring temperatures average about 62 degrees and summer temperatures average about 70 degrees Fahrenheit. Summer temperatures sometimes reach 90 degrees and winter freezing is infrequent.

Air Quality. Benicia is part of the San Francisco Bay Air Basin defined by the state Air Resources Board and is subject to administrative regulations of the Bay Area Air Quality Management District.

Numerous pollutants are present in air in varying amounts depending on location and local circumstances. The primary pollutants of concern to Benicia residents are Carbon Monoxide, Sulphur Dioxide and Particulates.

Carbon Monoxide is an odorless, invisible gas resulting from combustion. In the Bay Area about 95 percent of the carbon monoxide comes from automobiles. People who are exposed to the gas in high concentrations over a period of time can suffer dizziness, unconsciousness and even death. The maximum 8 hour concentrations of carbon monoxide affecting Benicia was estimated for the U.S. Army Corps in 1978 to be less than 4 milligrams per cubic meter on an annual basis. The level considered by the federal government to be necessary to protect public health should not exceed 10 milligrams per cubic meter. Localized concentrations of carbon monoxide along heavily travelled roads or near parking areas may exceed the standard on a temporary basis however the wind pattern in Benicia quickly mixes and disperses carbon monoxide.

Sulphur Dioxide is a problem in the Bay Area only in the vicinity of refineries. The heating and burning of fossil fuels like coal and oil releases the small amounts of sulphur present in these fuels. Sulphur dioxide can damage vegetation and affect the health of animals. Due to the prevailing westerly wind in Benicia, the residential areas are subjected to nominal amounts of this pollutant. Air movement carries in a northeast direction thus in the area between Industrial Way and Lake Herman Road, north of the refinery, the average annual concentrations of sulphur dioxide reach an estimated maximum of about 65 milligrams per cubic meter. The federal standard is established at 80 milligrams per cubic meter.

Particulates such as dust, mist, ash, smoke and fumes result from

combustion in automobile engines and from chemical reactions such as found in refining processes. Due to the freeway network in Benicia, present residential areas are subjected to average annual concentrations of approximately 30 milligrams per cubic meter. Average annual concentrations of up to 60 milligrams per cubic meter are experienced in the industrial park northeast of the refinery in the area between Industrial Way and Lake Herman Road. This higher figure equals the state standard for suspended particulates. Consequently, future land uses in the impact area should be selected which involve indoor rather than outdoor work areas for employees.

An Air Pollution Emergency Plan has been developed by the state in which various levels of alert are described and specific pollutants are identified. For Benicia, the applicable pollutants are carbon monoxide and sulphur dioxide. Neither poses a significant threat at the present time. Should a major wind shift occur simultaneously with a sulphur dioxide episode however, the emergency plan calls for the Air Quality Management District to issue a health warning to people with respiratory problems, advise schoolchildren to discontinue strenuous activities and request specific sources of pollutants to reduce emissions. If second or third stage alerts are reached, warnings are issued to people most susceptible to respiratory problems and various abatement proceedings are initiated at the pollution source.

Pollution levels were projected to 1985 as part of the analysis prepared for Benicia's marina. The future air quality is based on a population of 18,000. Motor vehicle use and miscellaneous industrial sources were assumed. The following table compares present emission levels with projected levels in terms of tons per day.

POLLUTANT SOURCE	POLLUTANT EMISSIONS - TONS/DAY					
	Carbon Monoxide		Sulphur Dioxide		Particulates	
	1977	1985	1977	1985	1977	1985
Motor Vehicles	14.1	16.7	0.05	0.04	0.1	0.2
Major Industries	1.4	1.4	39.30	39.30	3.5	3.5
Other	0.8	2.0	0.10	0.20	0.1	0.2

Wildlife Habitat

There are few, if any, parts of the Benicia Plan Area which have not been used for grazing land or in some way altered from the original habitat. Most of the area can therefore be classified as urban or rural. However, several major natural habitat classifications are represented. North of Lake Herman Road, in areas protected from prevailing winds, are scattered oak trees representative of the Oak Woodland habitat. At the northwest end of Lake Herman are alders which are representative of the Riparian Woodland habitat and various rushes representative of the Fresh Water Marsh habitat. Studies

of the Southampton properties discovered several wet swale areas which contain Fresh Water Marsh representatives. Except for the few, rather locally concentrated differences described above, undeveloped areas within the City Limits consist of disturbed Grassland habitat.

A major element in the Benicia General Plan is the waterfront area which is bracketed by the Salt Water Marsh habitats of Benicia State Park and the huge marsh preserve of Suisun Bay. The marsh is, of course, part of the system of salt water habitats including the water surface which serves as a resting and feeding place for migratory birds, the water body which supports the important anadromous and bait fishes and the bottom of the Strait and bays which support shellfish and bottom fish. The mudflats occupy the intertidal region between the water body and the marsh; this is the most important feeding area for fish, shellfish and birds.

According to the California Native Plant Society there are several rare or endangered plant species which may exist in the Benicia Plan area. All are native to undeveloped grassland areas.

SPECIES	HABITAT	COMMENTS
<u>Plagiobothrys hystriculus</u> (a borage or herb plant)	Grassland; plains and hills.	Annual plant - flowers in April - May
<u>Balsamorhiza macrolepis</u> (balsam root)	Grassland; fields and rocky hillsides.	A perennial herb - flowers March - June
<u>Orcuttia mucronata</u> (a grass variety)	Possibly in swale areas or in ponds left from rain.	Annual plant
<u>Trifolium amoenum</u> (a clover variety)	Swales and low, rich fields.	Annual plant - flowers April - June

Several threatened or endangered wildlife types may also exist in the Benicia Plan area. These are listed in the Federal Register (FR), the U.S. Bureau of Sports Fisheries and Wildlife, Threatened Wildlife of the United States (BSF&W) and the California Department of Fish and Game report, At the Crossroads; A Report on California's Endangered Fish and Wildlife (CFG). The status of each species; endangered (E), threatened (T) or status undetermined (U), is given in the table.

SPECIES	STATUS AND SOURCE		
	FR	BSF&W	CFG
<u>Buteo lineatus elegans</u> Red bellied - red shouldered hawk			U

(Continuation)

SPECIES	STATUS		
	FR	BSF&W	CFG
<u>Buteo regalis</u> Ferruginous hawk		U	
<u>Falco mexicanus</u> Prairie falcon		T	
<u>Falco peregrinus anatum</u> American peregrine falcon	E	T	E

In addition to the above raptors are possible rare and endangered wildlife associated with Salt Marsh and Salt Water habitats. These are listed in the Red Data Book and Endangered Fish and Wildlife of the United States. Again the status is noted.

SPECIES	STATUS
<u>Reithrodontomys raviventris</u> Salt marsh harvest mouse (rodent)	Rare
<u>Laterallus jamaicensis sandvicensis</u> California black rail (bird)	Rare
<u>Acipenser transmontanus</u> White sturgeon (fish)	Undetermined

Archeological Factors

Chief of the Suisun Indians who inhabited the Fairfield area and presumably ranged south towards Benicia was named Solano; thus the County name. The Karkin triplet of the Ohlone Indians occupied the area along what is now known as the Carquinez Strait. Other Indians of the general region were the Patwins, Wintuns, Wappos, Miwoks and Pomos. No archeological sites have been found in the Benicia Plan Area although it is presumed that shells, arrow fragments and other relics might be found in excavations along some of the wet ravines which are recommended for open space in the Benicia General Plan. The local Indians were known to be fishermen and seed gatherers rather than hunters. The limited cover and forage provided by the natural grassland and the cultural orientation of the Indians resulted in no major permanent settlements. The possibility of discovery of an archeological site, while remote, does exist. Should a site be discovered during excavation, work should be stopped until an archeological investigation can be completed and recommendations reviewed. Cost for archeological review should be the responsibility of the property owner.

Historic Street System

The original settlement of Benicia was surveyed by Jasper O'Farrell who also laid out the street system in San Francisco. A five mile stretch of shoreline was selected and a grid system of streets was superimposed with little relation to topography. All north-south streets in the original settlement have 85 foot wide rights-of-way while the east-west streets have alternate 60 and 85 foot wide rights-of-way. North-south streets were extended beyond the shoreline out into the water. Street names are alphabetical in the east-west direction and numbered in the north-south direction. An east-west freeway (Highway 780) was constructed generally between O and S Streets following the topography. New development north of the highway has abandoned the grid system to minimize grading and street slope; the roads follow natural grades. The City has a continuing policy of acquiring submerged land where the grid streets extended beyond the shoreline. The ends of streets at the shoreline or bluff have been incorporated into the system of waterfront parks and pathways in many locations.

Mineral Resources

Mineral resources consist of surface soils for agricultural uses or domestic gardens and subsurface materials such as mined rock or minerals.

Soils. The Department of Agriculture, Soil Conservation Service, in the Soil Survey of Solano County, identify the predominant soil in the Benicia area to be of the Dibble and Altamont Series of expansive clay formations. These soils have the greatest limitations for the types of plants which can be grown without special soil treatment and are best suited to open rangeland or recreational purposes if left undeveloped. Past use of the unurbanized land in Benicia has been for grazing purposes. The amount of rainfall and low permeability of the soils contribute to the limited variety of natural vegetation which is supported. The Sky Valley area, particularly along the creek, is comprised of the richer, Rincon Series of clay loams which is capable of more intensive agricultural uses. These are alluvial soils formed from erosion of the sedimentary rocks of surrounding slopes. According to the Soil Survey data, the predominant soil types are suitable for management of small birds such as quail and doves and are suitable for the impoundment of water as a waterfowl habitat and for fish. Thus the Lake Herman area, shown as a park in the General Plan, could support a suitable range of wildlife for public enjoyment.

Subsurface Resources. The only significant mineral resource in the Benicia area is the availability of rock to process for road bed and crushed rock for asphalt. Some quarrying has been done along Highway 680 to get material for freeway construction. An active quarry exists along Lake Herman Road west of Lake Herman in the boundary hills between Benicia and Vallejo. Recent expansion of the

quarry has resulted in a cut face visible from the Lake Herman area. To the extent possible, the City should discourage further expansion of the visible cut in an eastern direction. New quarry sites should not be encouraged within the Benicia Plan Area where highly visible from residential areas.

Several abandoned mercury mines are known to exist in the Sulphur Springs Mountain area. These mines have not been in production since the mid 1940's. Future mining activity is not expected nor should it be encouraged in the Benicia Plan Area.

Open Space/Conservation Map

The principal resource map for both the Conservation and Open Space Maps is contained within the Open Space Element. Reference should be made to the planning factors identified on the map. In general, the wetravines, marsh areas and steep slopes are intended to be conserved for habitat value. The grassland or rangeland areas in private ownership, unless specifically reserved for open space are intended to be utilized for future urban uses described in the Land Use Element.

Energy Conservation

Every decision leading to the construction of a project or some use of land has energy use implications. To a lesser extent, open space areas that are managed in some form require energy commitment. Fuel to power a ranger's vehicle is a commitment of fuel resources. Fuel to power tractors, to seed land or to manufacture pipe used in irrigation are all examples of energy use for agricultural purposes. For development projects, there are 'indirect' energy costs involved in the manufacture of building materials, and there are 'direct' costs involved in the ongoing operation (heating, lighting, etc.) of the project. Research has shown that less total energy is used for higher density development than is used for low density development. This is due partly to lower site improvement costs per square foot of building construction and partly to lower ongoing operation costs.

Recommendations for voluntary energy use minimization are included in the Public Facilities Section of the Land Use Element.

For consistency with the State's format for energy analysis, the British Thermal Unit (BTU) is used as the basic unit of energy. Because many projects utilize large quantities of energy, the Therm (100,000 BTU's) is often used. The BTU is equivalent to the amount of heat necessary to increase the temperature in one pound of water by one degree Fahrenheit. Tables on the following page summarize the amount of energy for site development and ongoing operation of various types of development projects.

TOTAL ENERGY REQUIRED FOR RESIDENTIAL DEVELOPMENT (THERMS)
(Includes 'Indirect' and 'Direct' Energy)

REFERENCE	Single Family Conventional	Single Family Clustered	Townhouse Clustered	Walk-up Apartment
<u>Unit Size</u>	1600 Sq. Ft.	1600 Sq. Ft.	1200 S.F.	1000 S.F.
<u>Site Development:</u> (Street, Storm Drain, Sewer, Gas Water, Electric, Telephone)	3825	2841	2048	1383
<u>Utility Maintenance:</u> Over 20 Years	1331	1357	1174	1091
<u>Construction: Per Residential Unit</u>	14511	11056	7452	6070
<u>Operational Cost:</u> Per Residential Unit (Estimate: Energy use varies by locale) Over 20 Years	41991	41991	30951	27049

ENERGY REQUIRED FOR NON-RESIDENTIAL OPERATIONS
(20 Year Commitment - Per Square Foot)

REFERENCE	Therm/Square Foot/20 Years
Low Rise Office	28.24
School	17.34
Retail Store	83.80
Nursing Home	96.55
Library	53.09
Auditorium	33.53
Indoor Swimming Pool	183.26

Water Quality

Water quality is important to Benicia. The fresh water flow into Lake Herman is important because this is the backup water supply for domestic purposes. The City should take an active role in working with the Local Agency Formation Commission to enlarge Benicia's Sphere of Influence from the line as shown in the Jurisdictions Map, Map 2 in the Plan Introduction, to the Sky Valley watershed boundary which coincides with the General Plan Study Area boundary. Water quality in the Carquinez Strait is important from the standpoint of water contact along the shoreline.

Water quality in Lake Herman is presently maintained by prohibiting general access to the City owned land containing the lake. High mineral content in the water is related to Sulphur Creek which contributes to the total runoff.

Water quality in the Carquinez Strait is affected by ships moving through the Strait, by salt water intrusion due to fresh water removal in the Delta farther east, and to urban runoff through the storm drain and sanitary sewer system. Substantial analysis of possible environmental impacts was conducted in preparation for Benicia's marina. Water quality problems identified included the possibility of oil slicks getting on boats, the possibility of large floating debris damaging boats, the possibility of algae growth inside the marina due to warmer water temperature and the presence of nutrients and sedimentation.

Where urban runoff through the storm system or major channels is able to reach the deeper waters of the Carquinez Strait, dilution and mixing occurs to the extent that there is minimal impact. In areas where runoff flows through a marsh there is possibility that impurities in the runoff will be detrimental to the natural habitat. Runoff from the old dump in the deep canyon at the western edge of Benicia presently flows into the Southampton Bay marsh area and could be detrimental to marsh quality. Proper peripheral drainage, silt ponds and fill material to seal this dump can be installed at the time Canyon Drive is constructed in this area.

CONSERVATION ELEMENT POLICIES AND PROGRAMS

Conservation Element Policies

The policies set forth on the next page are intended to help guide decision making with regard to conservation of resources in Benicia.

Conservation Element Implementation Programs

The intent of the City is to implement using existing programs. Of these, the Environmental Review Process is particularly important.

CONSERVATION ELEMENT POLICY STATEMENTS	RELATION TO GENERAL PLAN ELEMENT										
	LAND USE					OTHER ELEMENTS					
	RESIDENTIAL	COMMERCIAL/INDUS.	PUBLIC FACILITIES	RECREATIONAL	HISTORIC	CIRCULATION/ TRANSPORTATION	HOUSING	CONSERVATION/ OPEN SPACE	SEISMIC SAFETY	NOISE	SCENIC HIGHWAYS COMMUNITY SAFETY
1. Future urban development should be directed in orderly phases to rangeland north of Interstate 780 with development controls to avoid steep hillsides and provide setbacks from major watercourses.								■			
2. Major marsh and mudflat habitats for fish and wildfowl production should be preserved.								■			
3. Future land uses in those areas of the industrial park which experience relatively high levels of particulates in the air should be types which involve indoor rather than outdoor work areas for employees.								■			
4. The City should continue its policy of acquiring submerged lands where historic grid streets extend beyond the shoreline.								■			
5. The City should take an active role in working with the Local Agency Formation Commission to enlarge Benicia's Sphere of Influence to include the watershed territory of Lake Herman to protect water quality.								■			
6. New quarry sites should not be encouraged within the Benicia Plan Area where highly visible from areas planned for residential use.								■			

Programs for Conservation Element Implementation

Below are listed the existing programs by which the Conservation Element is intended to be implemented. Reference is made as to the responsibility for program operation and the policies which are affected by its operation.

California Environmental Quality Act (CEQA) Environmental Review Procedures. For all development projects particular attention is given to the review of possible environmental effects which could degrade the City's natural resources. Development is generally discouraged in areas of major concern identified in the Conservation Element, and very careful mitigation is sought if development is necessary. (Existing)

Responsibilities

City Planner - Prepares initial study; coordinates review process.
Environmental Review Committee - Determines reporting requirements.
Interested Citizens - Provide input regarding report adequacy.
Planning Commission - Recommending body.
City Council - Decision making body; certifies report.

Policies Affected

All Conservation Element policies.

Project Review. Review of proposed projects by staff personnel with input to the Building and Planning Office is commonly performed. This procedure provides information for use in design review, zoning administration and subdivision ordinance administration.

Responsibilities

City Planner - Coordinates Review Process.
Department Heads - Comment on Development Proposals.

Policies Affected

All Conservation Element Policies

LAFCO Communication. Normal City communication with the Local Agency Formation Commission should continue to implement policy 5.

SEISMIC SAFETY ELEMENT

T A B L E O F C O N T E N T S

PURPOSE	SS-1
RELATION TO OTHER ELEMENTS	SS-1
GEOLOGY OF THE BENICIA PLANNING AREA	SS-1
EXPOSURE TO SEISMIC EFFECTS	SS-2
SEISMIC HAZARDS	
Surface Faulting	SS-2
Ground Shaking	SS-2
Ground Failure	SS-3
Seismically Induced Water Waves	SS-3
EARTHQUAKE HAZARD ZONES	SS-4
FAULT TRACES IN THE BENICIA AREA	
Green Valley Fault	SS-4
Southampton Fault	SS-4
Sulphur Springs Valley Fault	SS-6
EFFECTS OF PAST EARTHQUAKES IN BENICIA	SS-6
FUTURE EARTHQUAKES IN BENICIA	SS-7
EVALUATION OF SEISMIC HAZARDS - VARIOUS ZONES	SS-7
EARTHQUAKE HAZARD MITIGATION	SS-12
SEISMIC SAFETY POLICIES AND PROGRAMS	
Policies	SS-14
Programs	SS-16
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Modified Mercalli Intensity Scale	SS-5
Potential Seismic Hazards	SS-9
Consequences of Seismic Hazards	SS-10
Relative Potential Hazards	SS-11
Geologic Map	SS-18
Geologic Hazards Map	SS-19

SEISMIC SAFETY ELEMENT

Purpose

The Seismic Safety Element is intended to identify and appraise the various geologic materials found in the Benicia Planning Area, to discuss the reaction of these materials to seismic forces and to help develop policies and programs directed towards seismic safety.

Relation to Other Elements

The Seismic Safety Element is primarily related to the Land Use, Open Space and Safety Elements.

Geology of the Benicia Planning Area

The Coast Ranges in the area of Benicia consist of a series of northwest trending ridges and hills composed of folded and faulted Mesozoic and Cenozoic volcanic, metamorphic and sedimentary rocks. The dominant folds and faults within the area generally trend northwest following the ridges.

The oldest geologic materials found in the Benicia Study Area are sedimentary rocks of the Great Valley Sequence, of Upper Jurassic to Cretaceous age. These rocks consist of mudstone, shale and fine grained sandstone with some conglomerate and underly most of the northern part of the Study Area in a stratified thickness estimated to be nearly 19,000 feet. In the small northwest trending folds north of Lake Herman are found tertiary rocks of the Martinez formation (Paleocene age), Domingue sandstone (Lower Eocene age) and Nortonville shale and Markley sandstone from the Kreyenhagen formation (Eocene and Upper Eocene age) in stratified depths of 5500 feet.

The youngest geologic materials found in the Benicia Study Area are Quaternary alluvium deposited in the valley bottoms and adjacent to Suisun Bay. These deposits include terrace deposits, alluvium, landslides and Bay Mud. The terrace deposits, located at the base of the foothills along the eastern portion of the Study Area, consist of isolated elevated gravel areas intermixed with sand, silt and clay. Most of Central Benicia is underlain by alluvium which consists of deposits of gravel, sand, silt, and clay. Alluvium is found in the valley bottoms and other low areas as a result of natural deposition. Bay Mud of Quaternary age is found along the shoreline but extends inland in the vicinity of the Exxon refinery and consists of unconsolidated silt and clay with abundant organic material including peat. The Bay Mud was most likely deposited during interglacial stages when the sea was elevated and abundant silt and clay was being carried by tributaries entering San Francisco Bay. The Bay Mud is weak and highly compressible thus requires special foundation

considerations for proper building support.

Geologic Map. The Geologic Map, included in this element, indicates the different geologic units and the location of known fault traces.

Exposure to Seismic Effects

Benicia, as well as the entire San Francisco Bay Area and most of California, is located in a seismically active region. This means that strong earthquakes have occurred in the past, and the geologic framework is such that equally strong earthquakes are likely to occur in the future. These earthquakes and the geological framework represent potential seismic hazards to the health and safety of community residents and property. The state of the art can not eliminate all possible risks related to earthquakes; the fact that earthquakes can occur in California must be realized by all who choose to live here. Methods can be developed and implemented to mitigate the extent of damage from earthquakes. Essentially the more people who recognize and understand the problems associated with earthquakes the more effort that will be given to mitigation of potential hazards.

Seismic Hazards

In California it is generally recognized that earthquakes are produced by rupturing along faults. When the rupturing is confined to the subsurface rocks, the results can vary from minor to strong earthquakes. When the rupture extends to the ground surface, the result is surface faulting and very strong earthquakes. Seismic hazards associated with earthquakes include the following:

- . surface faulting
- . ground shaking
- . ground failure
- . seismically induced water waves

Surface Faulting. Surface faulting is generally limited to a narrow zone along the fault which is undergoing rupture. Therefore, only those structures or facilities which cross the narrow fault zone are subject to damage from this kind of hazard.

Ground Shaking. During the time that a fault is undergoing rupture the movement of rock masses generates vibrations in the earth which transmit vibrations to man-made and natural objects on the earth's surface. The severity of ground shaking and its effects on structures depends on several complex factors listed below:

- . magnitude of the earthquake.
- . distance from the rupture to the structure.
- . local soil and ground water conditions below the structure.
- . relationship between the period of ground vibration and the period of vibration of the structure.

- . the design of the structure.
- . the ground acceleration.
- . the duration of strong shaking.

Earth shaking, in general, is the most serious potential hazard to Benicia. However, it is not feasible to single out any one of the list of factors above as being the most critical. Most important is the quality of structural design of structures, the quality of materials used in construction and the quality of workmanship as the structure is being constructed. Proper structural design takes into account the local soil condition, the probable ground acceleration for the specific area in question, a reasonable set of design criteria for earthquake magnitude and various factors related to the way in which the materials being used in construction react under earthquake forces.

Ground Failure. Ground failure is a situation in which the ground does not hold together as a result of strong earthquake shaking. The resulting ground movement or instability can cause damage to building foundations and other structures. The types of ground failure include liquifaction, lurching, differential settlement, compaction, and seismically induced landsliding.

Liquifaction is a process in which there is rapid decrease in the shearing resistance of cohesionless soils and simultaneous, sudden, temporary increase in pore fluid pressure. This means that loose, water saturated granular materials, such as sand, silt or gravel, suddenly assume the properties of a heavy liquid. The soil loses its ability to support the downward load of a structure and the water which is present in the soil is unable to drain away. Liquifaction is a common phenomena during major earthquakes. The type of damage to structures which results is tilting, due to settlement, and cracking.

Lurching is the movement of ground materials towards a free face such as a cliff or stream bank. The earthquake forces cause earth to move in the unsupported direction and results in cracks in the ground generally paralleling the exposed band or stream. Lurching is not related to liquifaction.

Differential settlement or compaction occurs when earthquake forces cause ground materials to become more dense. This can occur in both dry and water-saturated granular soils, however, in saturated soils the water is able to drain away allowing densification. Variations in the types of soil locally contributes to differential settlement. Structural damage is caused when different parts of a structure suddenly are non-uniformly supported by the ground below.

Seismically Induced Water Waves. Ground vibrations during an earthquake can cause waves to move across water bodies. The damage from such occurrences results from the wash-up of the wave on land.

MODIFIED — MERCALLI INTENSITY SCALE OF 1931

- I Not felt by people, except under especially favorable circumstances. However, dizziness or nausea may be experienced. Sometimes birds and animals are uneasy or disturbed. Trees, structures, liquids, bodies of water may sway gently, and doors may swing very slowly.
- II Felt indoors by a few people, especially on upper floors of multi-story buildings, and by sensitive or nervous persons. As in Grade I, birds and animals are disturbed, and trees, structures, liquids and bodies of water may sway. Hanging objects swing, especially if they are delicately suspended.
- III Felt indoors by several people, usually as a rapid vibration that may not be recognized as an earthquake at first. Vibration is similar to that of a light, or lightly loaded trucks, or heavy trucks some distance away. Duration may be estimated in some cases. Movements may be appreciable on upper levels of tall structures. Standing motor cars may rock slightly.
- IV Felt indoors by many, outdoors by few. Awakens a few individuals, particularly light sleepers, but frightens no one except those apprehensive from previous experience. Vibration like that due to passing of heavy, or heavily loaded trucks. Sensation like a heavy body striking building, or the falling of heavy objects inside. Dishes, windows and doors rattle; glassware and crockery clink and clash. Walls and house frames creak, especially if intensity is in the upper range of this grade. Hanging objects often swing. Liquids in open vessels are disturbed slightly. Stationary automobiles rock noticeably.
- V Felt indoors by practically everyone, outdoors by most people. Direction can often be estimated by those outdoors. Awakens many, or most sleepers. Frightens a few people, with slight excitement; some persons run outdoors. Buildings tremble throughout. Dishes and glassware break to some extent. Windows crack in some cases, but not generally. Vases and small or unstable objects overturn in many instances, and a few fall. Hanging objects and doors swing generally or considerably. Pictures knock against walls, or swing out of place. Doors and shutters open or close abruptly. Pendulum clocks stop, or run fast or slow. Small objects move, and furnishings may shift to a slight extent. Small amounts of liquids spill from well-filled open containers. Trees and bushes shake slightly.
- VI Felt by everyone, indoors and outdoors. Awakens all sleepers. Frightens many people; general excitement, and some persons run outdoors. Persons move unsteadily. Trees and bushes shake slightly to moderately. Liquids are set in strong motion. Small bells in churches and schools ring. Poorly built buildings may be damaged. Plaster falls in small amounts. Other plaster cracks somewhat. Many dishes and glasses, and a few windows, break. Knick-knacks, books and pictures fall. Furniture overturns in many instances. Heavy furnishings move.
- VII Frightens everyone. General alarm, and everyone runs outdoors. People find it difficult to stand. Persons driving cars notice shaking. Trees and bushes shake moderately to strongly. Waves form on ponds, lakes and streams. Water is muddied. Gravel or sand stream banks cave in. Large church bells ring. Suspended objects quiver. Damage is negligible in buildings of good design and construction; slight to moderate in well-built ordinary buildings; considerable in poorly built or badly designed buildings adobe houses, old walls (especially where laid up without mortar), spires, etc. Plaster and some stucco fall. Many windows and some furniture break. Loosened brickwork and tiles shake down. Weak chimneys break at the roofline. Cornices fall from towers and high buildings. Bricks and stones are dislodged. Heavy furniture overturns. Concrete irrigation ditches are considerably damaged.
- VIII General fright, and alarm approaches panic. Persons driving cars are disturbed. Trees shake strongly, and branches and trunks break off (especially palm trees). Sand and mud erupts in small amounts. Flow of springs and wells is temporarily and sometimes permanently changed. Dry wells renew flow. Temperatures of spring and well waters varies. Damage slight in brick structures built especially to withstand earthquakes; considerable in ordinary substantial buildings, with some partial collapse; heavy in some wooden houses, with some tumbling down. Panel walls break away in frame structures. Decayed pilings break off. Walls fall. Solid stone walls crack and break seriously. Wet grounds and steep slopes crack to some extent. Chimneys, columns, monuments and factory stacks and towers twist and fall. Very heavy furniture moves conspicuously or overturns.
- IX Panic is general. Ground cracks conspicuously. Damage is considerable in masonry structures built especially to withstand earthquakes; great in other masonry buildings - some collapse in large part. Some wood frame houses built especially to withstand earthquakes are thrown out of plumb, others are shifted wholly off foundations. Reservoirs are seriously damaged and underground pipes sometimes break.
- X Panic is general. Ground, especially when loose and wet, cracks up to widths of several inches; fissures up to a yard in width run parallel to canal and stream banks. Landsliding is considerable from river banks and steep coasts. Sand and mud shifts horizontally on beaches and flat land. Water level changes in wells. Water is thrown on banks of canals, lakes, rivers, etc. Dams, dikes, embankments are seriously damaged. Well-built wooden structures and bridges are severely damaged, and some collapse. Dangerous cracks develop in excellent brick walls. Most masonry and frame structures, and their foundations, are destroyed. Railroad rails bend slightly. Pipe lines buried in earth tear apart or are crushed endwise. Open cracks and broad wavy folds open in cement pavements and asphalt road surfaces.
- XI Panic is general. Disturbances in ground are many and widespread, varying with the ground material. Broad fissures, earth slumps, and land slips develop in soft, wet ground. Water charged with sand and mud is ejected in large amounts. Sea waves of significant magnitude may develop. Damage is severe to wood frame structures, especially near shock centers, great to dams, dikes and embankments, even at long distances. Few if any masonry structures remain standing. Supporting piers or pillars of large, well-built bridges are wrecked. Wooden bridges that "give" are less affected. Railroad rails bend greatly and some thrust endwise. Pipe lines buried in earth are put completely out of service.
- XII Panic is general. Damage is total, and practically all works of construction are damaged greatly or destroyed. Disturbances in the ground are great and varied, and numerous shearing cracks develop. Landslides, rock falls, and slumps in river banks are numerous and extensive. Large rock masses are wrenched loose and torn off. Fault slips develop in firm rock, and horizontal and vertical offset displacements are notable. Water channels, both surface and underground, are disturbed and modified greatly. Lakes are dammed, new waterfalls are produced, rivers are deflected, etc. Surface waves are seen on ground surfaces. Lines of sight and level are distorted. Objects are thrown upward into the air.

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Dishes, windows and doors rattle; glassware and crockery clink and clash. Walls and house frames creak, especially if intensity is in the upper range of this grade. Hanging objects often swing. Liquids in open vessels are disturbed slightly. Stationary automobiles rock noticeably.
- V** Felt indoors by practically everyone, outdoors by most people. Direction can often be estimated by those outdoors. Awakens many, or most sleepers. Frightens a few people, with slight excitement; some persons run outdoors.
Buildings tremble throughout. Dishes and glassware break to some extent. Windows crack in some cases, but not generally. Vases and small or unstable objects overturn in many instances, and a few fall. Hanging objects and doors swing generally or considerable. Pictures knock against walls, or swing out of place. Doors and shutters open or close abruptly. Pendulum clocks stop, or run fast or slow. Small objects move, and furnishings may shift to a slight extent. Small amounts of liquids spill from well-filled open containers. Trees and bushes shake slightly.
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Ground cracks conspicuously. Damage is considerable in masonry structures built especially to withstand earthquakes; great in other masonry buildings -- some collapse in large part. Some wood frame houses built especially to withstand earthquakes are thrown out of plumb, others are shifted wholly off foundations. Reservoirs are seriously damaged and underground pipes sometimes break.
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Southampton Bay, southward to the west side of Martinez and south to where it intersects with the Muir Fault. The west side of the fault is mapped as high relative to the east side. There is no evidence to suggest that the Southampton Fault is active.

Sulphur Springs Valley Fault . The Sulphur Springs fault lies along the eastern slope of Sulphur Springs Mountain. The plane of the fault is described as dipping 54 degrees to the east with the east side thrust upward. The fault is referred to as a thrust fault. It is shown to separate the Franciscan and later intrusive rocks on the west from the shales of the Knoxville formation on the east. There is no evidence to indicate that this fault is active or potentially active.

Effects of Past Earthquakes in Benicia

The greatest number of historic earthquake related damage which has occurred in the San Francisco Bay Area has been caused by activity on the San Andreas Fault system, including its major branches, the Hayward Fault and the Calaveras Fault. The main San Andreas Fault zone lies about 30 miles west of Benicia.

The earliest recorded damage attributed to the San Andreas Fault was that resulting from a swarm of approximately 18 small earthquakes which occurred in the summer of 1808. The earthquakes reportedly caused serious damage to adobe (unreinforced) walls.

A strong earthquake occurred on the San Andreas Fault in 1838, which has been interpreted by geologists to have been equal in magnitude to the 1906 earthquake. Surface breakage occurred on the main fault trace.

An earthquake centered on the Hayward Fault on October 21, 1868, caused notable earth movement in Benicia and probably resulted in damage to unreinforced brick buildings and walls, breakage of glass and toppling of chimneys. Descriptions of damage place this earthquake generally in the range of Modified Mercalli Intensity VII (See Table).

An earthquake probably along the west Vacaville Fault occurred on April 19, 1892, and reportedly resulted in damage to brick structures and chimneys in Benicia. This, too would be given a Modified Mercalli Intensity VII.

The Major San Andreas earthquake of April 18, 1906 caused severe ground shaking in Benicia. Two or three houses collapsed and an estimated half of all chimneys were thrown down. Houses on firm ground in the Benicia Arsenal had their chimneys broken off and other government buildings were cracked or damaged. Many instances of broken glass, damage to furniture and objects being shaken off of shelves occurred. On alluvial land the shaking damage was most severe. A frame building near the City's watertank, used for a saloon,

was so damaged that most of it had to be taken down. The water pipe for the City was broken temporarily. This would correspond to a Modified Mercalli Intensity of VII to VIII.

On October 23, 1955, an earthquake occurred on the Concord Fault in central Contra Costa County. In Benicia, the shaking was felt by all in the community and there was general fright. Plaster and chimneys cracked, dishes broke, small objects in peoples' houses were overturned. This would correspond to a Modified Mercalli Intensity of VII.

On October 1, 1969, an earthquake along the Healdsburg Fault, centered near Santa Rosa, caused noticeable ground shaking in Benicia. The earthquake corresponded to a Modified Mercalli Intensity of V in Benicia.

Future Earthquakes in Benicia

The majority of historic earthquake related damage in the Benicia area has been caused by earthquakes along the San Andreas Fault and its major branches. The shaking was generally more disastrous on alluvial or filled land than on firm ground. In the future, one would expect that the major source of earthquake damage will come from the above faults, that the intensity at Benicia will be about equal to historic values and that the alluvial areas will receive the strongest earthquake shaking.

Evaluation of Seismic Hazards

The geologic materials recorded on the Geologic Map have been grouped into zones which react similarly to earthquake forces. These zones have been mapped on the Geologic Hazards Map and the predominant type of geologic-related damage associated with each zone is identified.

Zone A. The material underlying Zone A is classified as Bay Mud. This material consists of unconsolidated silt and clay with abundant organic material including peat. The materials are located at elevations near sea level adjacent to the shoreline where there is typically a low ground water table. The response of this material to seismic shaking could result in the highest shaking intensities within the study area. There is a high potential for differential subsidence, especially where fill has been placed over mud, a potential for liquefaction of loose, saturated sand layers, and a potential for lurching adjacent to the shoreline which constitutes a free (unrestricted) face.

Zone B. Zone B consists mostly of alluvial materials such as gravel, sand, silt and clay. Liquefaction can occur where this material is near surface groundwater, lurching can occur where this material exists along a stream corridor or at the shoreline and, in all cases, this material is subject to settlement or compaction under earthquake forces. In general, Zone B should react better than Zone A to shaking.

Zone C. Zone C contains Quaternary terrace deposits consisting of elevated areas of gravel, sand, silt and clay. Liquifaction can occur if the ground water level is near the surface, lurching can occur along stream corridors or at the face of cut banks and differential settlement can occur if these materials are in a water-saturated condition. In general, Zone C will react better than Zone C with respect to liquifaction. Also, the higher elevations will tend to resist settlement more than lower elevations since the presence of ground water is expected to be lower.

Zone D. Zone D consists of areas underlain by Pliocene lava flows and tuff beds. Typically, there is a thin soil cover over fairly resistant rock ridges. The potential for landslide is least in this zone. The most significant potential damage is that which would result from ground shaking where vibrations are transmitted to structures located on the ground.

Zone E. Zone E occupies the region immediately north of Benicia's presently developed area. It consists of areas underlain by Jurassic to Cretaceous aged mudstone, shale, sandstone and serpentine. There is a potential for landsliding in the steeper slopes however, the most significant potential damage is that which would result from ground shaking. In general, these rock units respond well to earthquake shaking and result in lower intensities than other Zones.

Zone F. This zone consists of the same rock units as found in Zone E with the addition of Tertiary shale and sandstone. The overall poor slope stability in zone F may be the result of numerous small old faults which have broken up the rock. Many landslides have been mapped through the hilly terrain in this Zone. The potential for liquifaction, lurching and differential settlement is extremely low in this zone and, in general, the rock reacts well to earthquake shaking where stable slopes exist.

Zone G. Zone G contains the major mapped landslides within Zone F. As such, landsliding is the main hazard associated with the zone. Landslides may be induced by natural rainfall which increases the amount of moisture in the soil thus reducing the soil friction or ability of soil particles to hold together. Landslides may also be triggered by ground shaking during an earthquake.

Seismically Induced Flooding. Arrows are shown on the Geologic Hazards Map to indicate the direction of flow from various lakes should the dams collapse or be breached as a result of earthquake shaking. Areas where flooding could occur as a result of tsunamis, levee breaking or high rainfall are also shown on the map.

Evaluation Rating Tables. The tables on the next three pages are intended to summarize the relationship between geologic zones and potential seismic hazards in the community at each location.

Zones		Relative Potential				
A	Bay Mud	4	4	N/A	0	N/A
B	Alluvium	4	3	N/A	0	N/A
C	Terrace Deposits	4	2	N/A	1	N/A
D	Volcanics	4	1	N/A	1	N/A
E	Sandstone Shale, Serp.	4	1	N/A	2	N/A
F	Sandstone Shale	4	3	N/A	3	N/A
G	Landslides	4	4	N/A	4	N/A
H	Special Studies	N/A	N/A	N/A	N/A	4
I	Flooding	N/A	N/A	4	N/A	N/A
Explanation		Shaking	Landsliding Lurching Liquefaction Differential Subsidence	Seismically Induced Flooding	Landslides Mudslides	Surface Fault Rupture
Increasing Potential	4 3 2 1 0					
			SEISMIC GROUND FAILURE			
N/A -not appropriate		I	II		III	IV
		Greatest Hazard to Community ←				

CONSEQUENCES OF SEISMIC HAZARDS

<u>HAZARD</u>	<u>CONSEQUENCE</u>
I SHAKING	Structural damage and/or collapse of structures; fires, possible injuries, loss of life, social and economic disruption due to failure of transportation structures and public utility structures; bridges, power plants, etc.
II GROUND FAILURE	Some injuries and loss of life, social and economic dislocation due to disruption of public utilities, gas, electricity, sewers, water. Disruption of transportation facilities such as roads, rail lines, docks. Local damage to public, residential and commercial structures. Seismically induced flooding could increase the consequences considerably.
III LANDSLIDES, MUDSLIDES	Some injuries and minimal loss of life, localized damage to structures. Temporary interruption of transportation facilities and public utilities. Minimal social and economic disruption.
IV SURFACE FAULT RUPTURE	Minimal injuries and life loss, localized damage to structures, public utilities and transportation facilities. Minimal social and economic disruption.

RELATIVE POTENTIAL HAZARDS
FOR ENTIRE COMMUNITY*

Seismic Hazard	Social Dislocation	Economic Dislocation	Hazard to Life	Personal Injury	Property Damage
Shaking	4	4	4	4	4
Ground Failure	3	3	1	2	3
Seismic Flooding	3	3	2	1	3
Landslides, Mudslides	2	1	1	1	2
Surface Fault Rupture	1	1	1	1	1

Higher Potential	4
	3
	2
Lower Potential	1

*Locally these potential hazard levels may be much higher than for the entire community, i.e., seismically induced flooding and surface fault rupture.

Earthquake Hazard Mitigation - Acceptable Risk Concept

There is some risk involved in almost all human activity. More lives are lost on American highways than the combined casualties of all wars in which the United States has been involved. More accidents occur in the relative safety of one's home than in other locations. Just as speed limits and safety signs are used to mitigate highway safety problems, or consumer programs are utilized to make homes safer, there are ways in which the risk from earthquake damage can be mitigated. One basic concept in dealing with natural disasters is the notion that life safety is the highest priority, property damage is next and temporary social disruption is the lowest priority. In this context then, various types of land use can be categorized as critical to the functioning of the community or critical because they house greater numbers of population or members of the population which are relatively unable to care for themselves during an emergency. These are listed in priority order below:

1. Structures in which a structural failure would result in considerable loss of life and property damage.
2. Structures which house emergency services or provide major public utilities.
3. Structures which house people who would be involuntarily subjected to risk or which house people who are relatively unable to care for themselves.
 - . schools
 - . hospitals
 - . jails
 - . convalescent homes
4. Structures with high occupancies.

Level of Mitigation. Based on the analysis presented in this element Benicia should plan for the impacts of a strong, distant earthquake such as that which would occur along the San Andreas Fault. To plan for the maximum possible earthquake is not practical nor is it economically feasible. This level is approximately equivalent to a Modified Mercalli Intensity Earthquake of intensity VII. The expected damage communitywide would be some injuries, some structural damage, but no total collapse of buildings, and some temporary social and economic disruption.

Mitigating Measures. There are four related actions which Benicia can follow to insure mitigation of seismic related hazards.

1. Utilize geologic and seismic data in land planning so that identified risk areas are avoided or structures and landforms treated and designed to reflect local site conditions.

2. Make sure that local grading and building codes reflect measures to minimize possible seismic damage.
3. Inspect older buildings and improve earthquake design features when possible.
4. Maintain a disaster preparedness plan.

Geologic Reports. A geotechnical report should be prepared for all new subdivisions in Benicia to address surface faulting, landslides, seismic ground failure and to provide input into evaluation of ground shaking. The geotechnical report should be prepared and signed by a registered engineering geologist. A registered civil engineer experienced in soil engineering should be involved in preparing and signing those sections dealing with landslides, liquefaction and general soil conditions. In each case the results of earth borings should be included and, where faults are suspected, trenching should be performed. The presence of ground water is important in determining the expected seismic response.

Special Study Area Reports. Geotechnical reports are required under the Alquist-Priolo Act prior to any development within the mapped study zones. This would apply to the study zone shown on the Geologic Hazards Map following the Green Valley Fault.

SEISMIC SAFETY POLICIES AND PROGRAMS

Seismic Safety Element Policies

Policies listed on the next few pages are set forth to help guide decision making with regard to potential seismic effects in Benicia. While the principal element to which each policy relates is the Seismic Safety Element, a cross index to other related elements which are also effected is included.

Seismic Safety Implementation Programs

The principal programs for implementation of the Seismic Safety Element are during Environmental Review and through special reports which should be made conditions of application for building or subdivision permits by the City. The maps included in the Plan Element are intended to serve as a major reference to determine the principal topics which should be of concern to the community in each area of the City. The programs are listed following the policies.

SEISMIC SAFETY ELEMENT POLICY STATEMENTS	RELATION TO GENERAL PLAN ELEMENT										
	LAND USE					OTHER ELEMENTS					
	RESIDENTIAL	COMMERCIAL/INDUS.	PUBLIC FACILITIES	RECREATIONAL	HISTORIC	CIRCULATION/ TRANSPORTATION	HOUSING	CONSERVATION/ OPEN SPACE	SEISMIC SAFETY	NOISE	SCENIC HIGHWAYS COMMUNITY SAFETY
1. High priority emergency service shall be given in the event of an earthquake to: 1) critical public facilities such as water supply facilities, school structures and structures housing police and fire equipment; and, 2) to areas where there are older, high-occupancy buildings and concentrations of elderly population such as in Central Benicia.			■						■		
2. Requirements of the Alquist-Priolo Act shall be strictly enforced by the City of Benicia.									■		
3. Geotechnical studies shall be required, in particular, for all land uses and structures where structural failure during an earthquake could result in considerable loss of life or injury to persons, or damage to high value property. Such studies shall be used to determine: a. extent and severity of potential hazards. b. proper locations for buildings. c. recommendations for special structural design.									■		
4. Future construction of critical public facilities should be discouraged in Zones A through C shown in the Geologic Hazards Map of the Seismic Safety Element.			■						■		

SEISMIC SAFETY ELEMENT POLICY STATEMENTS	RELATION TO GENERAL PLAN ELEMENT											
	LAND USE					OTHER ELEMENTS						
	RESIDENTIAL	COMMERCIAL/INDUS.	PUBLIC FACILITIES	RECREATIONAL	HISTORIC	CIRCULATION/ TRANSPORTATION	HOUSING	CONSERVATION/ OPEN SPACE	SEISMIC SAFETY	NOISE	SCENIC HIGHWAYS	COMMUNITY SAFETY
5. Geologic reports shall be required for all future subdivisions and structures in high landslide prone hillside areas of Benicia, with particular attention to design features necessary to safeguard the public facilities and utilities serving these areas.			■						■			
6. The City will consider sponsoring a program of inspection to make sure that parts of existing buildings are not loose or liable to fall and endanger the public during an earthquake.									■			
7. The results of soils, geological and environmental impact reports will be incorporated into the general plan from time to time; consideration will be given to waiving future reports where sufficient information warrants such action.									■			
8. The City will periodically update the uniform building code used in Benicia to reflect current knowledge about the seismic design of buildings.									■			

Programs for Seismic Safety Element Implementation

Below are listed both existing and proposed programs for Plan Implementation. Reference is made as to whether the program is existing or proposed, the responsibility for its operation and the seismic safety element policies which are affected by its operation.

California Environmental Quality Act (CEQA) Environmental Review Procedures. The initial study for any applicable project takes into account the background geologic and seismic information presented on maps and in the text of the Plan. Particular emphasis is placed on the evaluation of major known potential hazards. (Existing)

Responsibilities

- City Planner - Prepares initial study; coordinates review process.
- Environmental Review Committee - Determines reporting requirements.
- Interested Citizens - Provides input regarding report adequacy.
- Planning Commission - Recommending body.
- City Council - Decision making body; certifies report.

Policies Affected

Seismic Safety policies 1,2,3,4,5 and 7.

Subdivision Ordinance. The subdivision ordinance sets forth minimum standards for land division, site preparation and facility design. Additional standards should be incorporated to deal with the extent of grading, particularly in areas that are landslide prone, and to deal with minimum requirements for geologic reports. (Existing program - Amendment Recommended).

Responsibilities

- City Planner - Reviews tentative and final subdivision maps.
- City Engineer - Reviews subdivision and grading plans; would review geologic reports and design response.
- Building Official - Would review geologic reports, soil reports and geotechnical reports as they relate to structural design of buildings.
- Interested Citizens - Provide input during hearings on maps regarding the suitability of the project response to desired City policy.

Subdivision Ordinance (Continued)

Planning Commission - Decision making body; recommends, approves, denies or City Council project, with or without conditions, based on available information and findings set forth in the ordinance.

Affected Policies

Seismic Safety policies 2,3,5 and 6.

Project Review. Normal review of project proposals is undertaken at the time a request for building permits is made. This is oftentimes the most appropriate place to deal with detailed geologic, geotechnical and soils reports since these reports directly influence the technical review of foundation and structural design. (Existing)

Responsibilities

Building Official - Reviews building plans and technical reports.

City Engineer - Reviews grading plans and technical reports.

Seismic Safety Policies Affected

Policies 2,3,5 and 7.

Inspection of Buildings. A program of inspection of buildings, particularly the older commercial buildings in Central Benicia, is an ongoing activity shared by the Building Official and Fire Department. An attempt is made to inspect and require additional safety features each time new construction or renovation occurs. Structural improvements to conform with current earthquake design standards of the building code are incorporated where possible. (Existing)

Responsibilities

Building Official - Inspects buildings per building code.

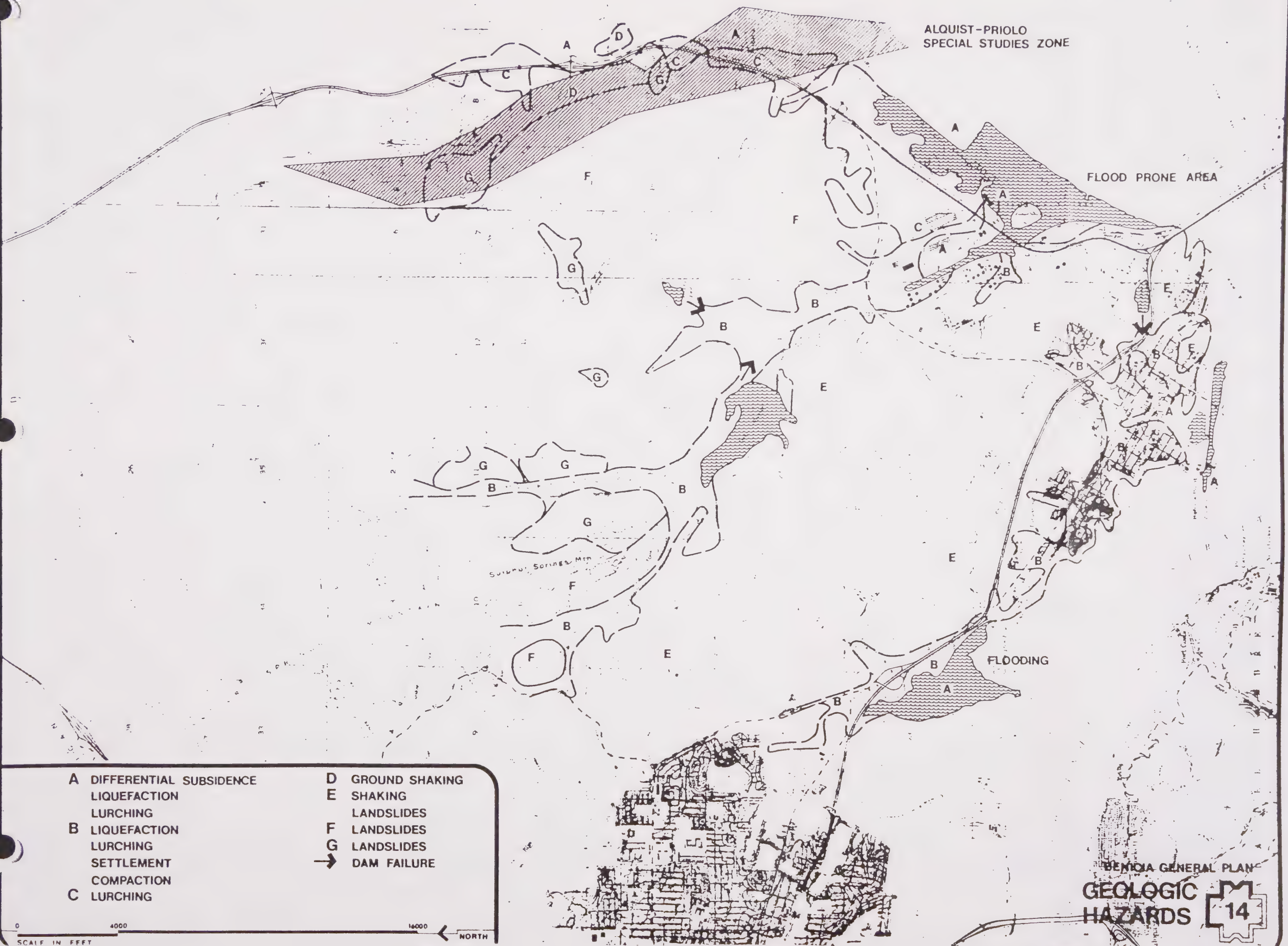
Fire Department - Inspects buildings per fire safety.

Policies Affected

Seismic Safety Policy 6.

Building Code Update. This is an ongoing program which is the responsibility of the Building Official. (Existing)

Policy Affected - Seismic Safety Policy 8.



ALQUIST-PRIOLO
SPECIAL STUDIES ZONE

FLOOD PRONE AREA

FLOODING

- | | | | |
|---|-------------------------|---|----------------|
| A | DIFFERENTIAL SUBSIDENCE | D | GROUND SHAKING |
| | LIQUEFACTION | E | SHAKING |
| | LURCHING | | LANDSLIDES |
| B | LIQUEFACTION | F | LANDSLIDES |
| | LURCHING | G | LANDSLIDES |
| | SETTLEMENT | → | DAM FAILURE |
| | COMPACTION | | |
| C | LURCHING | | |

0 4000 16000
SCALE IN FEET NORTH

NOISE ELEMENT

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NOISE ELEMENT

Purpose

The Noise Element is intended to describe the existing and projected future noise environments in Benicia so that harmful and annoying sound levels can be avoided. In the Noise Element major noise sources are identified, noise levels throughout the community are recorded, the effects of noise on the community are discussed and ways to minimize unwanted noise are outlined.

Relation to Other Elements

The Noise Element is related closely to the Land Use, Circulation and Housing Elements. The principal noise generator, typically, is vehicular traffic. People are most sensitive to noise levels which disturb their comfort at home. Sounds which are annoying, especially those which cause interference of personal activities such as sleeping, reading and simple relaxation should be minimized.

What is Noise?

Noise is defined by the dictionary as 'unwanted sound'. Noise is produced by rapidly vibrating solid objects such as vocal chords which cause changes in air pressure. Sound waves radiate away from the source of noise in all directions. Three qualities characterize the subjective effect of noise on the listener:

1. The frequency of the noise.
2. The intensity of the noise.
3. The time-varying character of the noise.

Frequency is defined as the number of oscillations a particle undergoes in one second. One complete oscillation constitutes one cycle; noise frequency is measured in Hertz (Hz) which is numerically equivalent to one cycle per second. A string vibrating 261 times per second, for example, would be expressed as 261 Hertz and is equivalent to middle C in the musical scale.

Intensity is the measurement of the sound energy or pressure. The human ear is sensitive to a wide range of intensity. The range of sound pressure levels between the faintest audible sound and the loudest sound the ear can withstand is in the order of one to one billion. In order to conveniently handle this enormous range of numbers, a logarithmic scale has been established so that the entire range is compressed to a range of from zero to 180. The sound pressure scale is expressed in decibels, a scale named in honor of Alexander Graham Bell. Because the decibel scale is logarithmic, a small decibel change represents a large change in intensity. A doubling of the sound energy results in an increase

of three decibels. The human ear, however, cannot usually perceive a three decibel change but, in fact, it usually takes a change of about 10 decibels before a doubling is perceived.

The time-varying character of sound is particularly important to recognize. Noise levels throughout the community do not remain constant but rather fluctuate constantly both over time and in duration. Community noise consists of both distant and near sources to the listener. Distant sources may include traffic, wind and industrial activities. Nearby sources may include individual vehicles passing by, aircraft flying overhead and trains passing by.

Measuring Noise - The A Scale

Sound is measured by instruments which pick up sound in a microphone and convert sound vibrations to electric energy. In order to approximate the hearing response of the human ear, filters are placed in the sound level meter to de-emphasize low and high frequencies thus emphasizing the normal range of human hearing. This weighting of noise measurement is called the A scale and measurements are referred to as dBA (A weighted decibel scale). The A scale weights the frequency range between 20 to 20,000 Hz. This A weighting filter has been available since the late 1930's and is incorporated in all sound level meters. It is one of the most accurate ratings for predicting loudness. Both frequency and intensity are registered.

The A-weighted scale accurately describes environmental noise at any one particular time however community noise levels vary continuously. In order to account for the time-varying characteristic of noise, all of the individual noise readings must be averaged over a 24 hour period to give an equivalent level. This equivalent noise level, expressed as CNEL (Community Noise Equivalent Level) can then be plotted on a map to illustrate average noise levels throughout the community.

Cumulative Noise Exposure - The CNEL

Noise from a passing truck or airplane flying overhead typically increases as the noise source approaches the listener and subsides as the source draws away. The measurement of one such occurrence is referred to as a 'single event'. In order to determine the total impact of all the single events that occur at a given location, all of the single events must be averaged together to form the equivalent of a steady noise value. The CNEL (Community Noise Equivalent Level) scale provides this average and is particularly well suited for the purpose because it recognizes that human sensitivity to noise increases during the evening and nighttime. The CNEL values represented on the noise maps include an addition of 5 dBA for evening noise levels and 5 dBA for nighttime levels

within the 24 hour averages calculated.

Human Reaction to Environmental Noise

The effects of noise on people can be grouped in three categories:

1. Subjective Effects: annoyance, nuisance, dissatisfaction.
2. Interference in Activities: interference with sleep, speech, learning.
3. Physio-logical Effects: from alarm or startle to hearing loss.

Most sound levels produce effects in just the first two categories. No completely satisfactory measure of the subjective effects of noise can be made because of the wide range of individual reaction to noise. Medical researchers suggest there is correlation between noise and mental stress. A study around London's Heathrow Airport showed higher rates of psychiatric disorders close to the airport than in quieter areas. The capability of noise to interfere with speech is of course, easily recognized.

The physiological effects of noise have been studied. The body responds to loud and sudden noises by a tensing of muscles, change in heartbeat and constriction of some blood vessels. Continued exposure to loud noises leads to body fatigue and can cause permanent hearing loss.

About 10 percent of the population are so sensitive to noise that they object to any noise not of their own making. Some complaints occur even in the quietest environments. About 25 percent of the population do not react or complain even in the severest noise exposures. Noise mitigation is thus aimed at the majority (middle 2/3) of the population.

The following conclusions have been established through extensive study:

1. Except in carefully controlled laboratory experiments, an increase of only one dBA cannot be perceived by humans.
2. Outside of the laboratory a three dBA increase is considered to be just noticeable.
3. A change of five dBA is required before any noticeable change in community reaction would be expected.
4. A ten dBA increase is subjectively heard as a doubling of loudness and would most certainly cause community response.

Chart of Typical A-weighted Sound Levels

The chart on the next page is intended to show common sound levels.

TYPICAL A-WEIGHTED SOUND LEVELS

SOUND SOURCE	dB READING	RESPONSE
CARRIER DECK OPERATION	145	painfully loud
	130	limit amplified speech
JET TAKEOFF (listener at 200 feet)	120	
AUTO HORN (listener 3 feet) DISCO	115	maximum vocal effort
JET TAKEOFF (listener at 2000 feet) GARBAGE TRUCK	100	
NEW YORK SUBWAY STATION HEAVY TRUCK (listener 50 feet away)	90	very annoying loudness
ALARM CLOCK	80	annoying
FREIGHT TRAIN (listener 50 feet away) FREEWAY TRAFFIC (listener 50 feet away)	70	telephone use difficult intrusive noise levels
AIR CONDITIONING UNIT (listener 20 feet away)	60	
LIGHT AUTO TRAFFIC (listener 100 feet away)	50	quiet
RESIDENTIALIVING ROOM	40	
LIBRARY (soft whisper at 30 feet)	30	very quiet
BROADCASTING STUDIO	20	
	10	just audible
	0	threshold of hearing

↑ noises can cause hearing impairment

Noise Compatibility Standards

Over the years many studies have been performed to determine how much noise is acceptable for different land uses. The Environmental Protection Agency has given emphasis to levels deemed appropriate for residential land uses and has suggested the following:

1. For prevention of speech interference and annoyance in indoor residential areas: 45 dBA
2. For prevention of speech interference and annoyance in outdoor residential areas: 55 dBA

Beginning with these basic criteria, recent work by the California Department of Health, Office of Noise Control, has resulted in the following compatibility chart which attempts to match each land use type with an appropriate range of noise levels. The land use compatibility chart used in conjunction with the noise exposure contours shown on the noise maps, provides a basis for decision making. Proposals for rezoning, for instance, can be evaluated for potential noise conflict without much difficulty.

Relation of Noise Element to State Administrative Code

Title 25 of the California Administrative Code requires that an acoustical analysis be prepared for new hotels, motels and multiple dwellings which are to be located where the CNEL is greater than 60 outdoors. The acoustical report must discuss how the exterior noise levels can be controlled to 60 CNEL and how the noise environment inside these structures can be controlled to not exceed 45 CNEL. The acoustical analysis is appropriately included as part of an Environmental Impact Report or can be a separate report accompanying the building permit application when no EIR is required.

How to Use the Noise Compatibility Chart and CNEL Contours

The CNEL contours on the noise maps are estimated values based on traffic volumes and known point noise sources. The calculated values have been adjusted to reflect noise measurements taken with a noise meter at a variety of locations and times in the community.

The CNEL contours are not intended to be precise for a given location but rather for use as a guide to determine when site specific acoustic analysis should be undertaken. As such, the noise maps provide an early warning system in the decision making process.

The product of site specific acoustic analysis should be recommended ways in which outdoor noise levels can be controlled to the level set forth in the compatibility chart for the land use type under consideration, and, for uses covered by the California Administrative

Code, recommended ways in which exterior noise can be controlled from intruding to interior spaces. Standards for the preparation of acoustical reports are as follows:

1. Minimum Contents of Acoustical Reports - Site specific reports should contain a brief description of the project and the sensitivity of the land use type to noise. an accurate map describing the setting with surrounding uses and noise sources identified, and a quantitative description of the noise environment. For multi-story structures the report should discuss noise effects for the upper floors. Field noise sample measurements should be taken over several days and the average CNEL calculated should be based on daytime, evening and nighttime readings.
2. Qualifications for Preparing an Acoustical Report- Noise reports should be prepared by an acoustical engineer holding a degree in engineering, architecture, physics or allied discipline able to demonstrate a minimum of two years experience in the following areas of acoustics: transportation noise forecasting, building acoustics, field measurement of noise and noise mitigation.

Present Noise Environment in Benicia

During the daytime, traffic on Interstate 680 and Interstate 780 are the major contributors to the noise environment in the middle and eastern sections of Benicia, respectively. Peak noise levels are generated by truck traffic on these highways and to some extent along Military Highway and along 2nd Street. In the downtown area of Benicia, the noise environment is influenced by local stop and go traffic.

At night, the percent of truck traffic (versus total vehicular traffic) increases over that of the daytime. As a result, truck noise is a greater contributor to the noise environment at night.

In the eastern sector of Benicia, train passages are a major contributor to the peak levels of noise especially where the tracks run parallel to the highway. Train passages are heard intermittently throughout the day and night. Trains serving the industrial, warehouse and refinery areas are heard mostly between 7:00 A.M. in the morning and 10:00 P.M. at night.

Noise measurements were taken at a total of 26 different locations in Benicia using a Pulsar, Model 40, Type 2 Sound Level Meter during February and March 1979. The locations at which readings were taken are shown on the Existing Noise Map. CNEL contours were plotted

using standard statistical methods based on traffic volume information supplied by the California Department of Transportation for major highways and on information supplied by Southern Pacific Transportation Company for railroad use.

The field noise measurements indicate the calculated noise contours to be conservative and also serve to demonstrate the shielding effects of topography. Field measurement sites O and P, for instance, are located on the High School and Mary Farmar School properties and had readings lower than calculated because of the intervening backdrop of hills between the campus and Highway 780. Conversely, however, the field measurements taken at City Park were higher than the calculated contours because of the effects of local traffic entering and leaving the Solano Square Shopping Center. Nevertheless, most of the field readings coincide with the calculated contours within 3 dBA variation.

Analysis of the population exposed to relatively high noise levels (above 70 dBA) indicates that the east end of Benicia, both above and below Highway 780, are most impacted. At specific sites the shielding effects of topography and other noise barriers such as solid walls and fences may reduce actual sound levels below that shown in the noise contours. However, the likelihood of noise impact is shown in the following locations:

- . Upper end of Varni Court.
- . Along East O Street between East 4th and East 6th.
- . Lower end of Pacifica Street.
- . Lower end of Francisca Court.
- . Lower side of Warwick Drive between Southampton Road and Dale Court.
- . Portion of the residences on Sunset Circle.

Future Noise Environment in Benicia

Traffic on Interstate 680 and Interstate 780 will substantially increase over the next 15 years, causing an estimated decrease in average vehicular speed of five miles per hour on most sections of the highway. The hourly traffic flow mix of trucks and private automobiles during a typical 24 hour period are not expected to change. No major increase in railroad operation is expected to occur in the future.

Multifamily dwellings within 3200 feet of Interstate 780 and within 9700 feet of Interstate 680 having direct line-of-sight to these roadways will be impacted by noise. Planned development of apartments and townhouses north of Highway 780 along Southampton Road will be within the zone of impact (CNEL above 60 dBA). Specific locations may be protected by topographic or man-made barriers. In any case

where the future use falls within noise contours exceeding 60 dBA acoustic reports should be required by the City in advance of issuing building permits.

Future noise levels are expected to increase such that all of the school sites will fall within the CNEL 60 contour. In accordance with the Noise Compatibility Chart this level is higher than that normally recommended thus the School District should be urged to conduct surveys from time to time to determine whether noise levels are interfering with the educational process. Recommendations for mitigating excessive noise levels can then be formulated.

Industrial lands in the eastern section of Benicia should continue to be separated from adjacent residential areas by a buffer zone consisting of vacant land or compatible light industrial uses. For future expansion of the industrial area near the Highlands Subdivision and the area around Pine Lake, offices or research and development facilities should be considered since noise levels from these types of facilities are usually less than those of heavy manufacturing.


ESTIMATE OF POPULATION AFFECTED BY NOISE


CNEL NOISE LEVELS (dBA)	1979 POPULATION	PERCENT TOTAL POPULATION	PROJECTED 1995 POPULATION	PERCENT TOTAL POPULATION
BELOW 60	7721	55.7	8661	36.1
60 - 65	4568	32.9	12,358	51.5
65 - 70	932	6.7	5200	21.6
70 - 75	644	4.7	2466	10.3
SUBTOTAL ABOVE 60	6144	44.3	20,024	83.4
TOTAL POPULATION	13,865	100.0	24,005	100.0


LAND USE COMPATIBILITY
FOR
COMMUNITY NOISE ENVIRONMENTS


LAND USE CATEGORY	COMMUNITY NOISE EXPOSURE LEVEL (CNEL)					
	55	60	65	70	75	80
<u>Residential</u> - Low Density, Single Family Homes, Duplex and Mobile Homes						
<u>Residential</u> - Multi-family						
Motels and Hotels						
Schools, Libraries Churches Hospitals and Nursing Homes						
Sports Arenas, Outdoor Spectator Sports						
Playgrounds and Neighborhood Parks						
Golf Courses, Riding Stables, Water Recreation, Cemeteries						
Office Buildings						
Industrial, Manufacturing, Utilities and Agriculture						

INTERPRETATION


Normally
Acceptable


Conditionally
Acceptable


Normally
Unacceptable


Unacceptable

Interpretation of the Land Use Compatibility Chart

Normally Acceptable. The range of noise levels in this category are compatible with the specified land use type. No special noise insulation is required in buildings of conventional construction.

Conditionally Acceptable. The range of noise levels in this category are higher than those normally acceptable for the specified land use type. A detailed acoustic study should be undertaken to set forth design features that will reduce exterior noise levels and for construction to control the amount of exterior noise reaching interior use spaces.

Normally Unacceptable. New construction or development of the specified land use type should be discouraged. If development is to proceed a detailed acoustic study must be prepared and needed noise insulation features incorporated into the design.

Unacceptable. New development of the specified land use type should not be undertaken when the site falls within the range of noise levels in this category.

Noise Mitigation Methods

In situations where the range of noise levels are higher than that considered normally acceptable for a specified land use type it may be possible to reduce the effective noise level to achieve better compatibility. Each site has its own characteristics and problems thus mitigation measures which are effective for one project may not apply to another. For this reason it is not appropriate to predetermine the method by which noise levels should be reduced or controlled throughout the community. Regardless of the mitigation measure or combination of measures which is used, it is almost always less costly to include the mitigation in the design phase rather than dealing with the problem later.

The measures or combinations of measures that can be used to mitigate noise fall into four general categories:

1. Site Planning
2. Architectural Treatment
3. Noise Barriers
4. Construction Modification

Site Planning. By taking advantage of the natural shape and contour of sites it is often possible to orient buildings and other uses in a way that will reduce or eliminate noise impact. Cluster development is conducive to noise reduction. The ways in which site planning

can be used to reduce noise impacts are as follows:

- . Increase the distance between the noise source and the receiver.
- . Place non-noise sensitive land uses (parking lots, maintenance facilities, utility areas) between the source and the receiver.
- . Use non-noise sensitive structures (garages) to shield noise sensitive areas.
- . Orient buildings so that outdoor areas are shielded from noise.

Architectural Layout. By attention to the types of uses being accommodated in a structure, the noise-sensitive uses can be moved to the quiet side of the building. Some typical examples are listed:

- . Put bedrooms on the side of the house farthest from roadways.
- . Do not locate outdoor balconies facing major roadways.
- . Design 'U' shaped buildings to shield patios.

Noise Barriers. Solid barriers between the noise source and the noise-sensitive area block out sound waves. The minimum acceptable surface weight for an effective noise barrier is 4 pounds per square foot (equivalent to 3/4 inch plywood) with no cracks or openings. To be effective the barrier must interrupt the line of sight between the noise source and the receiver. Noise barriers are created by topographical features in Benicia (hills lie between roadways and some development) so that the line of sight is interrupted. Earth berms can be created by grading to achieve the same result in some instances. It should be noted that short barriers are not effective regardless of height because sound waves will pass around the end of them and still reach the receiver. This effect, called flanking, can be minimized by bending the wall or barrier back from the noise source at the ends of the barrier.

Construction Modification. Indoor noise levels due to exterior noise sources can be controlled by the noise reduction characteristics of the buildings shell. In general, windows and doors are the weakest links in the acoustic skin of a building. The amount of insulation and sealing required depends on the amount of noise reduction required. The following approaches may be considered:

- . Use solid core doors having an acoustic door gasket.
- . Use double paned glass or seal windows entirely
- . Add insulation material to walls, ceilings and floors.

CNEL LEVELS MEASURED AT SPECIFIC POINTS IN THE COMMUNITY

Readings were taken at 26 positions in the community as a check on the calculated CNEL contours and to demonstrate the effects of topographic shielding. The CNEL levels at each position are listed below and shown on the 1979 Noise Level Map.

A 48	T 61
B 62	U 60
C 48	V 62
D 65	W 64
E 58	X 55
F 65	Y 56-58
G 57	Z 55
H 55-60	
I 60-65	
J 65	
K 65	
L 69	
M 65	
N 60	
O 55-60	
P 55	
Q 55	
R 68	
S 55-60	



— CNEL CONTOURS
● NOISE SURVEY SITES
(SEE TEXT)

0 2000 4000
SCALE IN FEET NORTH

BENICIA GENERAL PLAN
1979 NOISE
LEVELS





CNEL CONTOURS

0 2000 8000
SCALE IN FEET

NORTH

BENICIA GENERAL PLAN
1995 NOISE
LEVELS

16

NOISE ELEMENT POLICIES AND PROGRAMS

Noise Element Policies

The following policies are set forth to help guide decision making with regard to noise impacts in Benicia. While the principal element to which each policy relates is the Noise Element, a cross index to other related elements which are also affected is included. Policies are listed on the next page.

Land Use Implementation Programs

Although some of the policies are self-explanatory, there are some which require particular programs to facilitate implementation of the General Plan. The following programs are intended for the implementation of the Noise Element of the General Plan.

NOISE ELEMENT POLICY STATEMENTS	RELATION TO GENERAL PLAN ELEMENT											
	LAND USE					OTHER ELEMENTS						
	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	RECREATIONAL	HISTORIC	CIRCULATION/ TRANSPORTATION	HOUSING	CONSERVATION/ OPEN SPACE	SEISMIC SAFETY	NOISE	SCENIC HIGHWAYS	COMMUNITY SAFETY
1. Buffers identified in the Land Use Element should be used to separate divergent land use types.	■	■	■	■						■		
2. Apartments should be sited so as to avoid direct noise impact from Interstate Highway 780.	■									■		
3. Areas where land drops or rises gradually from the edge of Interstate Highway 780 should be avoided as locations for future multi-family residential development.	■									■		
4. Land Use decisions should be based on the Noise Compatibility Chart and acoustic reports required for all proposed developments in locations where noise levels exceed the 'normally acceptable' range for the specified land use type.	■	■	■	■						■		
5. Consideration should be given to establishing noise reduction programs for high impact noise areas that are already developed.										■		
6. A detailed acoustic report shall be required in all cases where hotels, motels and multi-family dwellings are proposed in areas exposed to exterior CNEL 60 or greater.	■	■								■		
7. Procedures for dealing with complaints about noise in the community should be established.										■		

Programs for Noise Element Implementation

Below are listed both existing and proposed actions programs for Plan Implementation. Reference is made as to whether the program is existing or proposed, the responsibility for its operation and the noise policies which are effected by its operation.

California Environmental Quality Act (CEQA) Environmental Review Procedures. In cases where an initial study of a project indicates that noise may be a significant impact, an acoustic study is undertaken and noise mitigation measures recommended in the EIR. (Existing)

Responsibilities

City Planner - Prepares initial study; coordinates review process.

Environmental Review Committee - Determines reporting requirements.

Interested Citizens - Provide input regarding report adequacy.

Planning Commission - Recommending body.

City Council - Decision making body; certifies report.

Policies Affected

All Noise Element Policies.

Zoning Ordinance. Includes Section 313 (Performance Standards) which can be used to establish appropriate conditions for the establishment of uses having possible noise impacts. Requirements for the establishment of buffer zones can be made a part of project approval in cases where an environmental report has not been required under CEQA (Existing).

Responsibilities

City Planner - Evaluation of projects; coordinates project review.

Interested Citizens - Provide input regarding suitability of noise mitigation and suitability of uses in specific locations.

Planning Commission - Decision making body - recommends, approves, denies or City Council proposed project, with or without conditions, based upon findings set forth in the ordinance.

Policies Affected

Noise Element Policies 1,2,3,4,6.

Community Noise Ordinance. An enabling ordinance setting forth performance standards for various land uses and mechanical devices, measuring techniques to be used and procedures to be taken for the resolution of noise complaints in the community. (Proposed)

Responsibilities

Police Department - Responsible for recording noise complaints; maintains noise monitoring equipment of the City; informs City Planner of ongoing land uses which are in violation of ordinance standards.

City Planner - Responsible for preparing reports for Planning Commission and City Council action on projects; suggests conditions of project approval consistent with ordinance standards; in cases where existing uses are violating City noise standards the City Planner shall be responsible for abatement proceedings.

Interested Citizens - Provide input on chronic noise problems.

Planning Commission - Recommending body.

City Council - Decision making body; adopts ordinance.

Policies Affected

Noise Policies 1 and 7.

Comment

Minimal time committment is required for recording noise complaints and for referencing ordinance standards during project review. Substantial time committment may be required for abatement of chronic noise problems if contact with the offender and informal encouragement to mitigate the noise problem is unsuccessful.

Some time committment intially may be needed to train City personnel in the methods of noise measurement and recording.

Some minimal cost initially may be needed to acquire noise equipment.

A Noise Ordinance following the format contained on the next page covers each of the essential topics needed to resolve noise problems.

MODEL NOISE ORDINANCE

Section 1 - Purpose. In order to control unnecessary, excessive and annoying noise and vibration in the City of Benicia, it is declared to be the policy of the City Council to prohibit such noise and vibration from all sources specified in this ordinance. It is determined that certain noise levels and vibrations are detrimental to the public health, safety and welfare and are contrary to the public interest. Therefore the City Council hereby declares that creating, maintaining and causing any noise or vibration not in conformance with this ordinance is a public nuisance and shall be punishable as such.

Section 2 - Definitions

Section 3 - Authority and Duties of the Noise Control Office (NCO)

- 3.1 - The Police Department shall be the lead agency for noise control.
- 3.2 - A Noise Control Officer may be designated within the department to investigate noise complaints, make noise measurements and coordinate the noise control activities of all City departments.
- 3.3 - The Police Department shall be authorized, upon presentation of proper credentials, to enter and/or inspect any private property, place, report or records when granted permission by the owner or owner's agent.
- 3.4 - The Police Department shall be authorized to investigate and pursue possible ordinance violations and shall be authorized to delegate functions specified by the ordinance to other departments subject to approval by the City Manager.

Section 4 - Noise Measurement and Recording Procedure

- 4.1 - Noise factors to be used in determining whether a violation has occurred include: a) the noise level of the objectionable noise; b) the ambient noise level without the intrusive sound; c) the proximity of the noise to residential sleeping facilities; d) the existing setting including zoning of uses in the area; e) the number of persons affected; f) the time of day; g) the noise duration and whether it is constant or intermittent; and, h) the date.
- 4.2 - Noise measurements shall be made using a type 2 sound level meter (American Standards Institute Specification) having a microphone, wind screen and output meter with settings for dBA scale and both slow and fast response. Readings shall be taken ten or more feet from any wall or reflective surface and four to five feet above the ground.

Section 4 (Continued)

- 4.2 - Calibration of the measuring equipment shall be performed before each measurement.

Section 5 - Noise Standards

5.1 - Prohibited Noise-Producing Activities

- . Owning or possessing any animals or birds which frequently or for long duration howls, barks, meows, squawks or makes other sounds which create a noise disturbance.
- . Operating a radio, phonograph, tape recorder, t.v. or musical instrument between the hours of 10 P.M. to 7 A.M. in such a manner as to cause a noise disturbance across a residential or commercial property line.
- . Operating construction tools or equipment for drilling, repair, alteration or demolition work between the hours of 7 P.M. to 7 A.M. in such a manner as to cause a noise disturbance across a residential property line.
- . Operating any air-conditioning equipment in such a manner as to exceed the following levels:

Noise level on the neighboring property line (five feet above ground) may not exceed 60 dBA.

Noise level at the center of a neighboring patio (five feet above ground) may not exceed 55 dBA.

5.2 - Motor Vehicle Noise Limits

Motor vehicle noise limits on public right-of-way are set by the California Vehicle Code. It shall be the policy of the City of Benicia to enforce these provisions.

Motor vehicle noise created on private property is covered under both the California Vehicle Code and under the general nuisance provisions of Section 5.1 .

5.3 - Maximum Permissible Noise Levels by Receiving Land Use

The upper end of the range specified as normally acceptable for any specified land use in the Noise Compatibility Chart of the General Plan Noise Element shall be used to determine whether a noise violation has occurred. In reviewing a noise complaint, the noise standard for the specified land use is compared to the field measurement. The following

standards should be utilized:

1. The noise standard set forth in the Compatibility Chart should not be exceeded for a cumulative period of more than 30 minutes in any one hour.
2. The noise standard set forth in the Compatibility Chart plus 5 dBA should not be exceeded for a cumulative period of more than 15 minutes in any one hour.
3. The noise standard set forth in the Compatibility Chart plus 10 dBA should not be exceeded for a cumulative period of more than five minutes in any one hour.
4. The noise standard set forth in the Compatibility Chart plus 15 dBA should not be exceeded for a cumulative period of more than one minute in any one hour.
5. The noise standard set forth in the Compatibility Chart plus 20 dBA should not be exceeded for any period of time.

SCENIC HIGHWAYS ELEMENT

T A B L E O F C O N T E N T S

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RELATION TO STATE SYSTEM	SH-2
HIGHWAY 780 - GLEN COVE TO PINE LAKE	
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SCENIC HIGHWAYS ELEMENT

Purpose

The Scenic Highways Element is intended to identify and discuss the principal land areas and man-made features viewed from certain highways and roads in Benicia so that scenic qualities can be retained and unsightly land uses can be avoided. Entry points to Benicia along the selected routes act as Benicia's front door. Benicia's front yard is revealed and an initial image of the community established for those who travel the scenic roads system through Benicia.

Relation to Other Elements

The Scenic Highways Element is related primarily to the Land Use, Circulation and Open Space Elements.

Scenic Routes in Benicia

There are three principal scenic routes recognized in the Benicia Plan from which a variety of scenic resources can be viewed:

Highway 780 - Between Glen Cove Road and Pine Lake.

Highway 680 - Between Morrow Lane and the Benicia Bridge.

Lake Herman Road

Open Space Gateways

A key feature of the Benicia General Plan is the recognition of four natural gateways to the community along the specified scenic routes. Topography and road configuration leading up to each gateway tends to block views into the community. Only after passing through the gateway are various parts of the community revealed.

Undeveloped hillsides and landscaped slopes leading up to the gateways help give Benicia a separate identity from other nearby communities and adds to the sense of a rural setting. The features of these gateways are discussed below as they relate to each of the scenic roads.

Boundary Hills

Another key feature of the General Plan, related to the gateways, is the recognition of important visual resources identified as the Boundary Hills. These north-south trending hills extend from Dillon Point on the Carquinez Strait at the south, to well beyond Lake Herman Road on the north. The Boundary Hills, viewed from Highway 780 and from

Lake Herman Road form the basis of the visual and physical separation from Vallejo essential to the maintenance of Benicia's separate identity.

Relation to the State Scenic Highways System

In 1973, the State adopted a Master Plan for Scenic Highways. None of the routes through Benicia have been officially designated in the State Plan. However, Benicia may, upon adopting satisfactory regulatory controls for scenic roads, apply to the state for official status.

Scenic Corridor Descriptions

Highway 780 - Between Glen Cove Road and Pine Lake

Open Space Gateways. The eastern gateway to Benicia occurs on this route where the roadway climbs upward from the Highway 680 intersection and crests in the vicinity of Pine Lake. A magnificent view across the surface of Pine Lake and over the hilltops of Benicia to the distant Carquinez Bridge opens up as one moves west through this gateway. The western gateway to Benicia on this route consists of a composite of open lower hillsides, freeway landscaping and the Southampton Marsh in the vicinity of the Columbus Parkway interchange. Views into the community begin to open up as one moves east through the Boundary Hills.

Outward Views. Benicia's residential character is established by views along this route. Views to the Carquinez Strait impart a sense of water-orientation. Views to the steep, wooded slopes of northern Contra Costa County across the Carquinez Strait and to various open lower slopes immediately adjacent to the roadway through Benicia impart a rural image. The experience of moving through the topography along the 780 corridor, where views alternate between broad vistas and close containment is particularly exciting. Major access to Central Benicia and to waterfront recreational potential is provided by this route.

Visual Corridor. The experience of travelling from west to east along Highway 780 reveals the importance of the Boundary Hills on the north side of this route. The Boundary Hills, formed of a composite of close and distant hilltops and hillsides, serving to visually separate Benicia from Vallejo, first become apparent along Highway 780 at the Glen Cove interchange. The Boundary Hills comprised of the east facing slopes above Benicia State Park, south of Highway 780, are particularly important when travelling from east to west. This portion of the Boundary Hills can be seen from various places along Highway 780 inside Benicia.

Between Pine Lake and East 2nd Street there are both vacant lands and the edges of development. The historic Arsenal Cemetery lies in the undeveloped canyon below Pine Lake and north of Highway 780. Open hills containing the City's old water treatment facilities lie

to the south of the Highway opposite Pine Lake. Single family and multiple family residential development is visible between East 5th Street and East 2nd Street and the edges of the freeway right-of-way in this area are not improved with landscaping. Between East 2nd Street and Southampton Road (West 7th), views are generally contained by open hillsides. A notable wooded slope exists at the north side of the highway west of East 2nd Street. Between Southampton Road (West 7th) and the west end of Military, the north side of the highway is contained by graded banks and the view south by the back sides of hills above the High School and Mary Farmer School sites. Freeway landscaping along this stretch is also incomplete. Between the west end of Military and the Columbus Interchange, the north side of the highway is contained by open lower hillsides while the view south and west is across the Southampton Marsh to the Park Hills. The overall impression of Benicia from the 780 corridor is one of a relatively low density residential community. Commercial development is downplayed and in the future should not be allowed to be highly visible and thus exploitive of travellers along the highway corridor.

Highway 680 - Between Morrow Lane and the Benicia Bridge

Open Space Gateway. The northeastern gateway to Benicia occurs on this route where the roadway passes under the Lake Herman Road overpass and around the point of land marking the interchange. The visual experience is controlled by the constraint of open hillsides to the west receding as the gateway is passed to reveal Benicia's major industrial area.

Outward Views. The views along this route establish an initial image of Benicia as a place where high quality environment for manufacturing and import/export activities is provided. It becomes immediately clear that industrial activities are contained by natural topographic boundaries within the basin formed by the hills below Lake Herman Road on the north, the slopes above East 2nd Street to the west, the main ridgeline to the south and Suisun Bay to the east. The attention to building design and site landscaping for those uses on Park Road near the highway, establish the image of industrial activity carried on in a park setting. The huge refinery complex, tending to dominate most views west into the industrial basin, is well landscaped. Its protruding stacks and mechanical apparatus comprise a massive industrial sculpture contrasting with the backdrop of hills. To the east in Suisun Bay is the curious sight of the Navy's 'mothball fleet' of outdated wartime vessels.

Visual Corridor. When travelling from north to south along this route the approach to Benicia is marked by steep, grassy slopes dotted with oaks and cattle on the west and by the expanse of Suisun Marsh to the east. Once the Benicia City Limits are reached, views open up on both sides of the road briefly however the road focus is directly upon several large storage tanks set on the north side of the main

ridge. When travelling from south to north, the focus of the route is to the rolling hills above and below Lake Herman Road.

A viaduct carries the highway from its high point on the main ridge at the south to the lower grade below. Views out are generally unobstructed along the viaduct. Between the industrial park interchange (north side of the viaduct) and Lake Heerman Road the visual corridor is contained by the Southern Pacific Railroad berm to the east and by slopes between Park Road and the highway to the west. Industrial Park landscaping has enhanced the corridor along part of this western edge.

Lake Herman Road

Open Space Gateway. The northwestern gateway to Benicia occurs on this route where the roadway passes through the boundary hills west of Lake Herman. Steep, high ridges rise at both sides along the road, near the 300 foot elevation, suddenly revealing a breathtaking view down across Lake Herman to the Carquinez Strait beyond. Some quarrying activity has begun to take place on the south facing slope of the hill along the north side of the road and should be discouraged from advancing farther east where the scar will be highly visible from the Lake Herman area.

Visual Corridor. The Lake Herman Road corridor portrays a rural image for Benicia which is unusual so close to an urban area. The visual experience between the natural portals of the Boundary Hills and Lake Herman is enhanced by unique rocky ridges projecting upward from the grassy slopes south of the road and by the presence of riparian vegetation concentrated along the creek feeding into Lake Herman. Open hillsides within the City-owned property surrounding Lake Herman rise up to form a pleasant backdrop to the lake on the south. Lower, open slopes of the rolling hills north of Lake Herman Road complete the visual experience. This is a little used road at present thus the road surface and road width have not been upgraded for heavy use.

Between Lake Herman and Highway 680 the rolling hills terrain alternately provides outward views and channelled views. Scenic oaks can be viewed on the otherwise grassy slopes to the north in a few locations where geologic activity has resulted in needed ground water supply. In general, only the lower open slopes of the hills on both sides of the road comprise the major visual experience between Lake Herman and Highway 680.

The Scenic Highways Map

For each of the designated scenic routes, the key visual features have been identified. Often these are the focal point of distant views and the visual experience can be preserved by establishing a policy of protecting the focal object and by insuring that the key sight lines from the road to the object do not become blocked. A generalized view corridor is shown along each of the routes. A more detailed analysis of each route for the purpose of establishing precise boundaries for these corridors is beyond the scope of the General Plan but should be undertaken in the future and specific corridor plans prepared. The precise corridor widths should vary to account for Benicia's deceptive topography. The width of the corridor should be maximum when scenic quality is high and minimum where existing development forms the visual boundary. For instance, effort should be concentrated on roadway landscaping along parts of Highways 680 and 780 where development exists while effort should be focused on proper site planning and generous setbacks for future uses which may occur along undeveloped portions of 680 and 780 and in the vicinity of Lake Herman Road. In each case the number of new access points to these routes should be minimized unless part of the major circulation system.

How to Use the Scenic Highways Map

The map is intended to help identify key visual features. Several levels of treatment are available and appropriate:

- . Preservation
- . Protection
- . Enhancement

Preservation. Every effort should be made to preserve several of the key visual features identified on the Scenic Highways Map listed below. Preservation is defined here as the preservation of identified sight lines and avoidance of visible development on the land comprising the visual object identified.

Boundary Hills. No development on these hills should be visible from Highway 780 in the arc between the sight lines shown on the map.

Park Hills. No development on these hills should be visible from Highway 780 in the arc between the sight lines shown on the map.

Lower Open Slopes (West End of 780). These lower slopes, adjacent to Highway 780, enhance the experience of entering and leaving Benicia at the west and should remain undeveloped.

Pine Lake. The lake, or an alternate open space or landscape feature should be maintained at this major entry point to Benicia and the sight line out to the Carquinez Bridge preserved. Additional pine and cypress trees should be planted along the north side of the lake to separate the lake visually from adjacent industrial uses as seen from Highway 780.

Reservoir Hill. No development should be permitted on those slopes facing Highway 780 across from Pine Lake. This is the City owned property containing the old reservoir and water treatment facilities. Any structures no longer needed should be removed.

Arsenal Cemetery. No development should be permitted on the hillsides facing highway 780 that surround the old Military Cemetery.

Rocky Ridges. No development should be permitted which would remove or block views to the rocky ridges visible from Lake Herman Road.

Riparian Trees. Every effort should be made to preserve the existing trees marking the creek entry from Sky Valley into Lake Herman.

Lake Herman. No development or planting should be permitted which would block sight lines from Lake Herman Road across Lake Herman to the Carquinez Strait. The critical location of this view is where the road emerges from between the high Boundary Hills and the view first appears.

Rolling Hills (Adjacent to 780 north of Lake Herman Road). No development should be permitted within the Highway 780 corridor northwest of the Lake Herman Road interchange as shown on the map unless on large sites and carefully landscaped to preserve the rural character of this approach to Benicia.

Protection. Every effort should be made to protect the overall visual experience along each of the scenic corridors primarily through enforcement of sensitive site planning. In a number of locations, the lower slopes of rolling hills which face directly onto the roadway are identified in the Scenic Highways Map. In these locations, first priority should go to keeping buildings and grading out of the corridor so that natural grassy slopes continue to be seen. In some cases, noise compatibility planning will support this approach. Where development is permitted in the corridor, buildings should be designed with materials that blend with vegetation and heavy landscaping should be required to screen views of buildings and to quickly cover any scars left from grading. The open quality of views should be retained by concentrating landscape materials near the objects to be screened rather than by creating a wall of vegetation immediately adjacent to the road.

Enhancement. Some enhancement, primarily landscaping, of the visual corridors and treatment of some features outside of the corridors would improve the visual experience as seen from the major scenic routes.

Freeway Landscape. Additional landscaping should be undertaken within the State right-of-way along both Highways 680 and 780 where unfinished cut banks face the road. This is the State's responsibility. The City should continue its policy of urging the completion of this landscaping.

Storage Tanks. The Highway 680 approach to Benicia from the north focuses directly upon several large storage tanks located on the ridgeline north of Pine Lake. Additional cypress and pine trees should be planted to soften the visual impact of these tanks on the landscape.

Local Streets and Parks. These are related to the scenic road concept.

Criteria for Site Planning in Scenic Corridors

The following criteria can be used as appropriate to minimize the effects of development in or near the scenic highway corridors.

Architecture - Utilize pitched roofs and varied horizontal surfaces to facilitate blending of man-made forms with the land. This allows the roof line (preferably wood) to follow the slope and for breaks in the horizontal plane to create shadows.

Signs - No billboard type signs should be permitted; temporary directional signs should be minimized; small, on-premise identification signs should be allowed when deemed necessary.

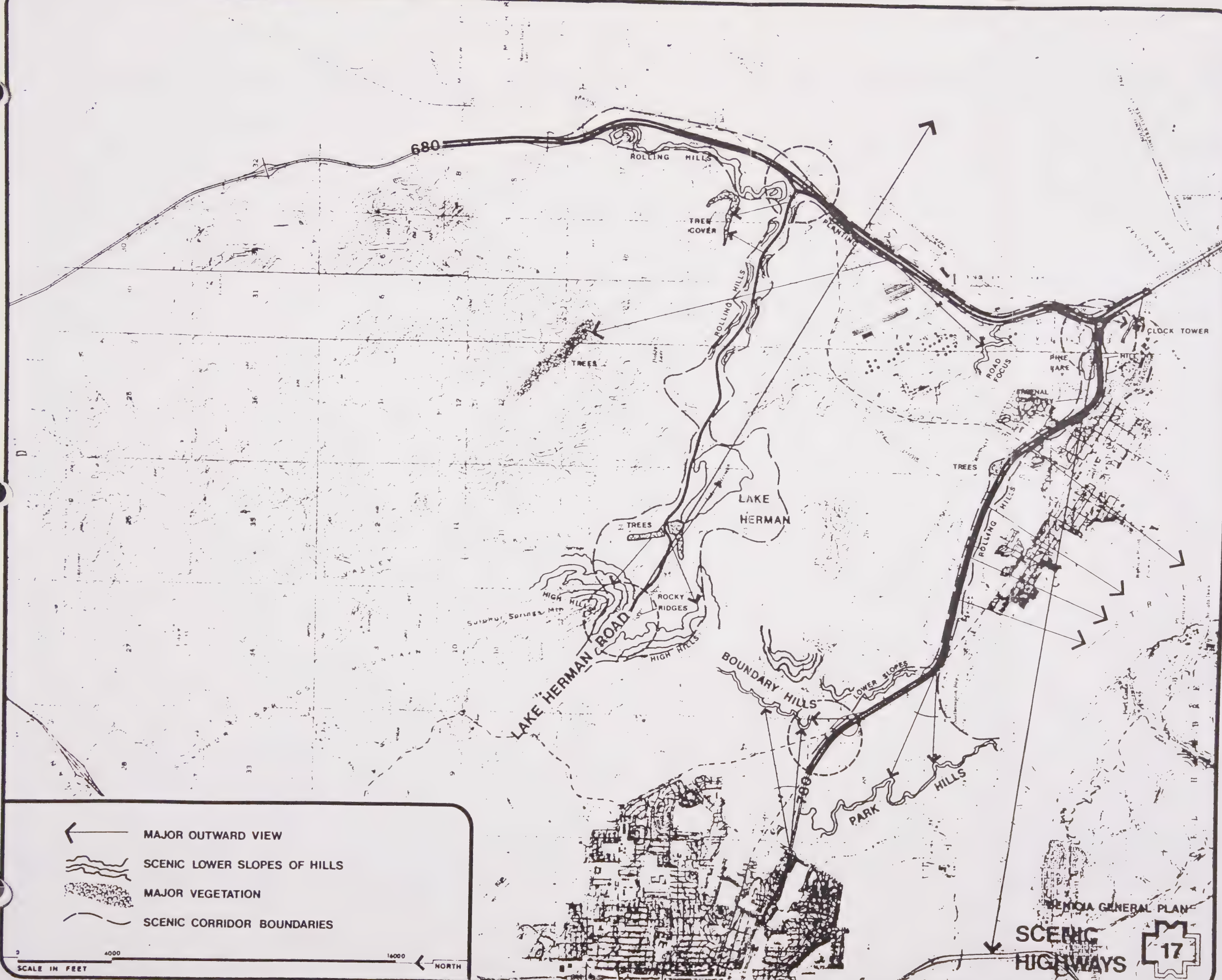
Utilities - Utility lines should be undergrounded.

Site Planning - Building setbacks should be varied; cluster development should be encouraged; grading cuts should be minimized; fences through grassy slopes should be avoided; roof lines should not project above the visual ridgeline of natural hills; planting should be concentrated around the buildings and site (not as a wall of vegetation along the roadway).

SCENIC HIGHWAYS ELEMENT POLICIES AND PROGRAMS

On the next several pages are policies to help guide decision making with regard to scenic routes and programs necessary for the implementation of policies.

SCENIC HIGHWAYS ELEMENT POLICY STATEMENTS	RELATION TO GENERAL PLAN ELEMENT											
	LAND USE					OTHER ELEMENTS						
	RESIDENTIAL	COMMERCIAL/INDUS.	PUBLIC FACILITIES	RECREATIONAL	HISTORIC	CIRCULATION/ TRANSPORTATION	HOUSING	CONSERVATION/ OPEN SPACE	SEISMIC SAFETY	NOISE	SCENIC HIGHWAYS	COMMUNITY SAFETY
1. Standards for site planning within scenic corridors along locally recognized scenic routes will be enforced.											■	
2. Detailed studies and mapping of scenic routes will be undertaken as necessary to define precise corridor boundaries.											■	
3. Every effort will be taken to preserve key scenic resources identified in the Scenic Highways Element.						■		■			■	
4. The City will continue its policy of urging the state to complete landscaping within the rights-of-way of Highways 680 and 780 especially where cut banks face the roadway.						■					■	
5. Additional pine and cypress trees should be planted around the north edge of Pine Lake to separate this area visually from adjacent industrial uses.											■	
6. Pine and cypress trees should be planted to screen the storage tanks located on the ridge behind Pine Lake where they are viewed from Highway 680.						■					■	
7. The existing water storage tanks on 'the view hill' should be incorporated into the landscape and design of the hilltop park at that location.				■							■	



- ← MAJOR OUTWARD VIEW
- ~~~~~ SCENIC LOWER SLOPES OF HILLS
- MAJOR VEGETATION
- SCENIC CORRIDOR BOUNDARIES

0 4000 16000
SCALE IN FEET NORTH

SCENIC HIGHWAYS ELEMENT POLICY STATEMENTS	RELATION TO GENERAL PLAN ELEMENTS											
	LAND USE					OTHER ELEMENTS						
	RESIDENTIAL	COMMERCIAL/INDUS.	PUBLIC FACILITIES	RECREATIONAL	HISTORIC	CIRCULATION/ TRANSPORTATION	HOUSING	CONSERVATION/ OPEN SPACE	SEISMIC SAFETY	NOISE	SCENIC HIGHWAYS	COMMUNITY SAFETY
8. The City should control uses of land at each of the four city gateways and should enhance these gateways to strengthen Benicia's identity.								▪			▪	
9. The City should maintain a visual and physical separation from Vallejo by protecting its boundary ridges and by keeping its western city gateway clear of visible development through the subdivision process.								▪			▪	
10. Tree planting should be accomplished along Military Highway with special attention given to the main western approach to Central Benicia.						▪					▪	
11. A street tree planting program should be implemented with tree selection aimed at providing a pleasant edge along major roads and a shade canopy over local streets.						▪					▪	
12. Owners should be encouraged to plant additional screen landscaping around apartment developments which are visible along the southern edge of Highway 780.	▪										▪	

Programs for Scenic Highways Element Implementation

Below are listed both existing and proposed action programs for Plan Implementation. Reference is made as to whether the program is existing or proposed, the responsibility for its operation and the scenic highways policies which are affected by its operation.

California Environmental Quality Act (CEQA) Environmental Review Procedures. The initial study for any applicable project takes into account the effects of the project on the visual resources identified in the Scenic Highways Element. Particular attention is intended to be given to the effect on features to be preserved. (Existing)

Responsibilities

City Planner - Prepares initial study; coordinates review process.

Environmental Review Committee - Determines reporting requirements.

Interested Citizens - Provides input regarding report adequacy.

Planning Commission - Recommending body.

City Council - Decision making body; certifies report.

Policies Affected

Scenic Highways Policies 1,3,8, and 9.

Zoning Ordinance. Sets forth minimum development standards; includes site plan and architectural review aspects of development proposals. A combining zone approach should be considered so that site planning criteria for use in scenic corridors is made a part of the zoning ordinance. The combining zone would simply specify the particular planning elements deserving special attention in addition to the basic parent zone standards. (Existing Program - Amendment Recommended)

Responsibilities

City Planner - Evaluation of projects per standards; coordinates the review process.

Department Heads - Comment on development proposals; suggest conditions of project approval.

Interested Citizens - Provide input regarding the suitability of project response to desired City policy.

(Zoning Ordinance Continued)

Planning Commission - Decision making body - recommends, approves, denies or City Council proposed projects, with or without conditions, based on findings set forth in the ordinance.

Policies Affected

Scenic Highways Policies 1,3,8 and 9.

Subdivision Ordinance. Sets forth minimum standards for land division and requires that approval of maps be based upon finding that the proposal is in conformance with the General Plan. The sections regarding standards should be amended to include specific reference to the scenic highways section of the General Plan. (Existing Program - Amendment Recommended).

Responsibilities

City Planner - Reviews tentative and final subdivision maps; coordinates the review process.

Department Heads - Comment on development proposals; suggest conditions of project approval.

Interested Citizens - Provide input regarding the suitability of project response to desired City policy.

Planning Commission - Decision making body; recommends, approves, denies or City Council project, with or without conditions, based on findings set forth in the ordinance.

Affected Policies

Scenic Highways Policies 1,3,8 and 9.

Freeway Landscaping. Freeway right-of-way landscaping is the responsibility of the State. The Benicia City Council and key staff personnel should continue the City's policy of urging the completion of landscaping through Benicia. First priority should be given to planting the various unfinished cut banks facing Highways 680 and 780. In most instances planting which blocks views from Highway 780 to the Carquinez Strait should be avoided in order to retain visual contact with water; ground cover and shrub plants are appropriate planting for purposes of erosion control and finished appearance. (Existing)

Policies Affected

Scenic Highway Policy 4.

Detailed Mapping of Scenic Corridors. Generalized boundaries of the various scenic corridors along scenic routes are drawn in the Scenic Highways Map. A more detailed analysis and precise mapping of the boundaries may be appropriate in the future particularly if implementation of the policies becomes difficult or interpretation is a problem. This could be undertaken by City staff alone or with the help of a design consultant. (Proposed)

Policies Affected

Scenic Highway Policies 1,2,3,8 and 9.

Landscape Programs. Several of the Scenic Highway policies, when implemented, will result in enhancement of the view from various scenic routes. The City Council and City staff should consider contacting the affected property owners and urging that specified improvements be undertaken. Completion of some planting programs, if not undertaken on an informal basis, can be required at the time requests for City approval of permit applications are made. (Proposed)

Polcies Affected

Scenic Highways Policies 5,6,7,10,11 and 12.

COMMUNITY SAFETY ELEMENT

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COMMUNITY SAFETY ELEMENT

Purpose

The Safety Element is intended to describe natural and man-made disasters which may pose a hazard to the residents of Benicia, to plan for the elimination or mitigation of potential hazards where feasible and to help organize coordinated operations in the event of an emergency. Primary topics are fire prevention and control, crime prevention, provision of emergency services, emergency communications and evacuation.

Relation to Other Elements

The Safety Element is closely related to the Seismic Safety Element, the Circulation Element and the Land Use Element.

In general, all discussion of seismic hazards and mitigation is included in the Seismic Safety Element rather than here.

Benicia's Emergency Operations Plan

Benicia has developed an Emergency Operations Plan which is the basis of the community's civil preparedness and comprises a principal tool for implementing the Safety Element. The Plan, authorized by various state emergency acts and local ordinances, is periodically updated and drills covering emergency procedures are conducted from time to time. The Benicia Police Department is responsible for maintaining the Plan and for running the emergency operations center located in the Police Department Offices.

Purposes of the Plan. The Emergency Operations Plan does the following:

- . Provides the basis for the conduct and coordination of operations and the management of critical resources during an emergency.
- . Establishes a mutual understanding of authority, responsibilities, functions and operations of civil government during an emergency.
- . Provides a basis for incorporating into the City emergency organization non-governmental agencies and organizations having resources necessary to meet unforeseeable emergency requirements.

Major Topics Covered in the Plan. Emergency organization is aimed at the following objectives:

- . Provide for continuity of government.
 - Preservation of vital records.
 - Lines of succession.
 - Temporary seat of government (Alternate locations).

- . Provide a basis for direction and control of operations.
- . Save lives and protect property.
- . Repair and restore essential systems and services.
- . Provide for protection, use and distribution of undamaged resources.
- . Coordinate operations with other jurisdictions.

Evacuation Routes

In the event of emergency the major arterial streets identified in Benicia's Circulation Element Map would serve as the principal routes for evacuation of people to undeveloped areas north and west of the City. These routes would also serve as the principal routes for movement of emergency equipment and supplies. Of particular importance are those routes which parallel Highway 780 in the east-west direction since these provide a backup to the freeway in the event overpasses collapse or are blocked. Development of the proposed Canyon Drive link at the west end of the City through the Upland Planning Area and ultimately to a connection at East 2nd Street constitutes an important part of the major route system that would be available for emergencies. The principal evacuation routes at present designation are:

- . Military Avenue West
- . East 2nd Street
- . East 5th Street
- . Industrial Way

Potential Emergencies

Four scenarios are presented to illustrate the types of emergencies which could occur in Benicia:

Scenario One: Major Fire. In the early 1960's a major grass fire swept from the north through the hills behind Benicia. Lack of access and available water in the fire vicinity made early control nearly impossible. As new homes are built north into the hills, the access has been improved by addition of new roads but the community exposure to potential fire hazard has also been expanded by addition of homes. This danger is particularly severe in summer months when grass is dry and when brisk winds from the north and northeast are blowing. Adequate fire breaks are important at the edges of developed areas. If planting is desired, fire retardant plant materials should be selected from a list maintained by the City's Parks and Recreation Office.

A major fire in Central Benicia could spread among older frame buildings especially in the commercial areas where the distance between buildings

is minimal and, because of age, fire separation between walls may not meet today's standards. Fire movement from roof top to roof top is another potential problem area in older commercial areas.

Fire safety is directly related to the following four factors:

1. Water Supply - Sufficient supply and pressure is necessary.
2. Accessibility - Availability of roads affects response time.
3. Land Slope - Steep terrain affects maneuverability; fire tends to spread faster on slopes than on flat ground.
4. Flammability and Availability of Combustible Material

Scenario Two: Major Earthquake. The 1906 earthquake on the San Andreas Fault west of Benicia, is the most severe earthquake experienced in Benicia within historic times. Ground shaking associated with such a major earthquake is the greatest hazard to Benicia. An earthquake of Mercalli Intensity VIII, as experienced in 1906, could cause general fright through the community and could result in tree limbs breaking and damage or collapse of some buildings and unreinforced walls. The secondary effects of an earthquake, fire and utility disruption, could also occur.

An earthquake in excess of the above intensity or resulting in ground displacement is not highly likely in Benicia. However, if one occurred on the San Andreas or Green Valley Fault, the following factors could cause the greatest disruption to Benicia:

- . Break in the main water supply line to Benicia from the north would result in reliance on the Lake Herman supply which is limited.
- . Failure of the Lake Herman Dam would result in flood damage downstream and loss of the community's back-up fresh water supply.
- . Break in petroleum lines or damage to refinery facilities could result in fire or explosions and spillage into the Carquinez Strait.
- . Collapse of the Benicia Bridge, the Highway 680 viaduct or various freeway overpasses could result in partial isolation of Central Benicia from other areas.
- . Damage to power lines and telephone lines would result in general loss of communication thus reliance on local power generators and citizen band radio.

Scenario Three: Hazardous Chemical Spill. The Class I chemical dump north of Lake Herman Road is a depository for hazardous chemicals from

throughout northern California. Heavy metals, residue from refinery cleaning and waste from various chemical processes are trucked to the site. The disposal area is constructed to withstand severe seismic forces and the site is carefully operated in accordance with all state and federal air and water quality standards. However, there is potential for community exposure to chemicals and fumes should one of the trucks carrying waste materials be damaged in an accident on the major highway system through Benicia on route to the disposal site. The possibility of a driver losing control of a truck is highest at sharp corners such as the Highway 780 intersection with Highway 680 or at the off-ramp at Lake Herman Road. Neither of these locations is presently close to a built up residential area. In this scenario, community safety is related directly to the following factors:

1. Travel Speed - Especially on corners.
2. Mechanical Maintenances of Vehicles - Condition of brakes; tires.
3. Driver Responsibility.

Scenario Four: War Emergency. Benicia could sustain damage from a wartime attack in the Bay Area. Depending on the nature of the war emergency the result could be physical damage to buildings and facilities and/or injury to persons. Benicia relies on hospital facilities in Vallejo thus communications and an evacuation route in this direction are important.

Emergency Service Capability in Benicia

Fire Prevention and Control Services

The Benicia Fire Department operates out of its Headquarters Station in City Park and from a temporary branch station on upper Panorama Drive north of Highway 780. The Fire Department serves all areas within the City limits and, under mutual aid agreements, extends service to areas outside the City. The Headquarters Station generally covers all of Central Benicia, the docks, the lower end of the Benicia Industrial Park and areas along the freeway. The branch station generally covers all of Southampton and the outer area of the Benicia Industrial Park. Although Panorama Drive does not connect eastward for general use at the present time, a minor connection to East 2nd Street has been constructed for emergency use.

Response Time. Fire Department response time to developed residential and commercial areas is within 3-4 minutes; with the branch station operating, the northeastern corner of the Benicia Industrial Park can be reached in 5 to 6 minutes. A permanent branch in the Southamptton area and in the northern end of the industrial park are proposed in the General Plan to insure that adequate response time will be maintained as these areas develop further in the future.

Fire Loss. Figures compiled for the 1978-79 City Budget indicate that the community has suffered minimal property loss due to fires over the last five years:

YEAR	TOTAL \$ VALUE OF LOSS
1973	76,860.
1974	99,125.
1975	34,875.
1976	61,950.
1977	108,376.

Fire Equipment. Headquarters Station maintains the bulk of Benicia's fire equipment. There are four pumper units (500 to 1250 gallon per minute capacity) which can be connected to the City's water supply system, two tankers (1000 gallon capacity) which are used to haul water to places like the Benicia Bridge or into the hills where water is not available, a power wagon for first aid and grass fires and various personnel vehicles. A boat for fire fighting and rescue activities is maintained and is suitable for use on the Strait. Equipment at the branch station consists of two pumper units (750 and 1250 gallons per minute capacity), a power wagon for first aid and grass fires and a pickup for miscellaneous uses.

Fire Control Limitations. At present the fire department does not regularly have crews on line to operate all of the equipment; items of equipment are available but are considered for reserve only.

At present there is a 35 foot ladder capacity thus structures over two to three stories in height are difficult to serve.

Fire zones have been established jointly by the Fire and Building Departments in Benicia. All areas of the City are presently in zones 2 or 3 (March, 1979). Recognizing the need for adequate fire separation, commercial uses are generally in zone 2 while all other uses are in the less restrictive zone 3.

Present limits to the City's water supply system are shown in the Public Facilities Map, Map 5, in the land Use Element. The more remote grassland areas of the Upland and Lake Planning Areas (See Map 4, Land Use Element) are where fire suppression is most difficult.

In general, the areas of steeper slopes are more difficult to serve than are the flatter, more accessible, areas. Water storage tanks should be constructed on high ground near the northwest corner of the Upland Planning Area in the future to facilitate fire safety.

The Benicia Water Department sizes lines and places fire hydrants on the water supply system. Standard hydrants all have two - 2 1/2 inch diameter valves and one - 4 1/2 inch connection. One of the Headquarters Station pumper units has large diameter hoses for greater water delivery potential in high value areas as needed.

Important factors affecting fire service capability are the size and configuration of access roads. Local streets which are extremely narrow or which dead end with no turnaround, limit the ability of fire vehicles to maneuver. Steep streets (over 10 percent slope) affect response time for heavy fire vehicles.

Relation to Other Departments. The Fire Department coordinates with the Water Department regarding water supply for fire suppression purposes. First aid and rescue activities are shared with the Police Department. Review of site and building plans is coordinated with the Building and Planning Office. Input from the Fire Department on development projects is particularly relevant for insuring general access (streets, etc.) and for making sure that specific locations can be readily identified (street numbering, etc.). The Streets Division of the City's Public Works Department coordinates with the Fire Department and is responsible for spraying and discing weeds on vacant lots throughout the City.

Fire Safety Improvements. A principal factor in providing fire service within a reasonable response time is accessibility. Construction of a standard road from Panorama Drive to East 2nd Street and from Columbus Parkway along Canyon Drive to connect with Solano Drive are important safety links shown in the overall circulation system.

Fire Safety Standards. The following standards for insuring fire safety in developed areas should normally be utilized in the City:

- . All fire hydrants have 2 - 2 1/2 inch and 1 - 4 1/2 inch valves.
- . Hydrants are placed a maximum of 500 feet apart on streets and at the ends of cul-de-sac streets.
- . Water supply capability should provide for delivery of 1000 gallons per minute for a period of two hours with a residual pressure of 20 pounds per square inch.

Police Service

The Benicia Police Department operates out of a single Central Station at City Hall. The Department serves all areas within the City Limits and, under mutual aid agreements, extends service outside the City. The Police Department is responsible for managing the Emergency Operating Center in the Police Department from which communications and rescue activities would be handled during an emergency.

Work Program Statistics. Figures compiled for the 1978-79 City Budget indicate that the number of calls has been increasing and that the number of traffic citations issued has been increasing. As the population has been increasing in Benicia so has the number of traffic accidents. Serious crime has been decreasing:

SELECTED CATEGORIES	CALENDAR YEAR				PER CENT CHANGE 1976 to 1977
	1974	1975	1976	1977	
Radio Calls (1000's) (Details Only)	40.6	44.5	35.9	50.4	+ 40
Traffic Citations	1142	1571	1587	2688	+ 69
Traffic Accidents	241	246	332	347	+ 5
Serious Crimes	658	658	756	671	- 11

Police Equipment. The Police Department has five patrol cars (March, 1979) and five administrative vehicles, a rescue truck and a small boat. The boat is suitable for use in rescue operations on the Carquinez Strait. The Sergeant's radio serves as a mobile base dependant on the automobile.

Police Service Limitations. Communication capability and accessibility to all areas are two principal limitations on police services. Benicia's topography causes radio contact to be poor in some areas of the City. County-owned communications equipment is leased by the City thus the relocation of radio transmit facilities to improve local communication is not controlled by the City. Relocation of the repeater from the Cemetery to 'the view hill' could substantially improve radio communications.

As with the Fire Department, narrow local streets and those which dead end with no turnaround, are difficult for police personnel to maneuver in and, thus, routine surveillance is difficult to provide.

A third limitation on service is related to equipment. At present the Police Department has no individual safety equipment such as tactical vests, bomb blankets and ballistic helmets. This type of

equipment would be used in the event of a shooting incident or civil disorder.

Relation to Other Departments. The Police Department shares the responsibility of providing first aid and rescue services with the Fire Department. Rescue service on the Carquinez Strait is shared with Fire and Coast Guard. Posting of speed limit signs, stop signs and other traffic safety devices is coordinated with the Public Works, Streets Division. Input from Police on site and building plans is requested from the Building and Planning Office. This input should be regularly sought in order to avoid creating situations where emergency access is hindered or lack of security invites crime.

Police Safety Improvements. During an emergency situation a field command center would facilitate communications and the delivery of emergency services. Such a center would be appropriately housed in a mobile van having its own generator; stationing of the vehicle at the City's Corporation Yard on East 2nd Street north of Highway 780 is recommended. The City has no such capability at present.

Public Works Role. The Benicia Public Works, Streets Division maintains various tractors, trucks and road equipment at the City's Corporation Yard which could be called into service during an emergency to transport people and supplies and to help keep roads open. Modest amounts of fuel and construction materials are available. Use of these resources would be managed through the Police Department's Emergency Control Center.

Private Authorities

The Exxon refinery has automatic fire control measures and is a member of a mutual aid group of several refineries and chemical plants. Collectively the group maintains special fire fighting equipment for major chemical fires, trained personnel and a program of fire drills.

SAFETY ELEMENT POLICIES AND PROGRAMS

Safety Element Policies

The policies on the following page are set forth to help guide decision making with regard to safety in Benicia. While the principal element to which each policy relates is the Safety Element, a cross index to other related elements is included.

Safety Element Implementation Programs

The principal programs for implementation of community safety are maintenance of the City's Emergency Plan and ongoing project review.

COMMUNITY SAFETY ELEMENT POLICY STATEMENTS	RELATION TO GENERAL PLAN ELEMENTS											
	LAND USE					OTHER ELEMENTS						
	RESIDENTIAL	COMMERCIAL/INDUS.	PUBLIC FACILITIES	RECREATIONAL	HISTORIC	CIRCULATION/ TRANSPORTATION	HOUSING	CONSERVATION/ OPEN SPACE	SEISMIC SAFETY	NOISE	SCENIC HIGHWAYS	COMMUNITY SAFETY
1. The City recognizes the potential danger to public safety that may result from natural or man-made causes of severe nature and seeks to minimize the public risk from such hazards.												•
2. Emergency evacuation routes shall be as set forth in the Safety Element of the General Plan.						•						•
3. The City will insure that access roads and adequate water supply for safety purposes will be installed and operable as a part of development projects approved in the City.			•			•						•
4. The City will undertake regular evaluation of safety service limitations to determine that adequate levels of service are provided.												•

Programs for Community Safety Element Implementation

Below are listed the programs for Plan Implementation. All are existing programs. Reference is made as to the responsibility for program operation and the safety policies affected by the program.

California Environmental Quality Act (CEQA) Environmental Review Procedure. The initial study for any applicable project takes into account the effects of the project on available safety resources and the relative safety of the project itself.

Responsibilities

City Planner - Prepares initial study; coordinates review process.

Environmental Review Committee - Determines reporting requirements.

Interested Citizens - Provides input regarding report adequacy.

Planning Commission - Recommending body.

City Council - Decision making body; certifies report.

Policies Affected

Safety Element Policies 1,3 and 4.

Project Review. Review of proposed projects by staff personnel with input to the Building and Planning Office is commonly performed. This procedure provides information for use in design review, zoning administration and subdivision ordinance administration.

Responsibilities

City Planner - Coordinates Review Process.

Department Heads - Comment on development proposals.

Policies Affected

Safety Element Policies 1,2,3 and 4.

Emergency Operations Plan. The Plan is the basis of Benicia's Emergency Preparedness Planning. Updating is performed by the Police Department with help from other departments; drills involve all personnel.

Policies Affected

All Safety Element Policies.

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GENERAL PLAN EIR

Purpose

The California Environmental Quality Act of 1970, as amended, provides an opportunity for public officials and interested citizens to review the possible effects of specific development proposals. The review procedure allows information to be available in advance of decisions to approve or deny significant projects and allows a determination to be made regarding the effects on the physical environment and consequently on the quality of life.

Level of Detail

There is a distinct difference between the level of detail of a general plan and that of precise plans for actual development at any specific location described in the general plan. Similarly, the EIR for a general plan is intended to identify major critical concerns on a citywide basis. This early warning system permits public officials and interested citizens to be aware of specific information which should be further explored and included in EIR's prepared for specific development projects.

Relationship to the General Plan

The intent of Benicia's General Plan is to include pertinent environmental analysis in each of the plan elements rather than in a separate EIR document. This EIR is an appendix to the General Plan. It consists of an index to those locations in the plan where the environmental setting, impacts and mitigation are included. Together, Benicia's General Plan and EIR should provide an overall framework against which subsequent, more specific development plans can be evaluated.

DESCRIPTION OF THE PROJECT AND SETTING

Project Description

The project consists of an update and revision of The Benicia General Plan. The revision is intended to supersede the General Plan of 1977, as amended.

Project Justification

The General Plan is mandated by State Law; see Preface Discussion, page i.

Project Setting

See Planning Context, Introduction page, I-1; Regional Setting, Introduction page, I-6; Local Setting, Introduction page, I-7.

Plan Study Area

See Ownership and Jurisdictions Map, Map 2, Introduction page, I-9.

Whom the Project Serves

See: The Planning Process, Preface page, i; Citizen Involvement, Introduction page, I-2; and, various profiles of Benicia population in the Housing Element.

DESCRIPTION OF THE PLAN AREA ENVIRONMENT

Natural resources are discussed in the Conservation Element; Specific environmental detail is further discussed in the Seismic Safety Element (geologic hazards), in the Scenic Highways Element (aesthetic), Open Space Element, and Recreation Section of the Land Use Element. A detailed index to information is included with each of these elements.

ENVIRONMENTAL IMPACTS OF THE GENERAL PLAN

Impacts of development are secondary effects of the general plan. Each of the plan elements includes discussion of potential impact from these secondary sources. The more significant impacts are noted below:

Topographic Modification - Development is generally limited to slopes below 30 to 40 percent slope. This limitation helps reduce the amount of grading so that erosion and siltation is not as likely to occur and it also minimizes the extent of visual scars which result temporarily even if a planting program is included as part of a development project. The Scenic Highways element addresses the importance of specific ridges, hillsides and other topographic features which should be preserved.

Climatic Modification - Implementation of the General Plan will not result in less rain or more wind but may have an influence on the air quality due to additional automobiles and industry; on water quality due to runoff from urban areas into salt and fresh water bodies and on natural vegetation due to augmentation of natural rainfall amounts by residential irrigation. New planting around homes and along streets may affect wind velocities locally and will provide shade from the sun at the ground level.

Geologic Effects - Implementation of the General Plan, particularly the Seismic Safety Element, will result in avoiding development in geologically hazardous areas and requiring special studies and appropriate mitigation for other areas which are known to

be susceptible to landslide, settlement or severe earthquake shaking. The Open Space Element discusses preserving areas north of Lake Herman Road which are relatively unsuitable for urban uses but which are suitable for agricultural activities. Potential flooding is discussed and mapped in the Seismic Safety Element.

Biological Impacts - The Conservation Element identifies various habitat areas which exist in Benicia and the Open Space/Conservation Map indicates key resources to be preserved. Among these are the valuable salt water system habitats of water, mudflat and marsh, the major watercourses, rangeland preserve and the fresh water habitat area of Lake Herman.

The effects of future urbanization, even at low densities, will be to frighten native wildlife and threaten burrowing animals with earth movement. At the edges of urban areas will be the potential problems from domestic dogs and cats which may hunt wildlife. The presence of humans, especially children, will tend to disturb plant life and forage for native wildlife. Introduced plant species may tend to dominate native species or retain moisture in the soil and provoke landslides during rains when the ground is saturated. The positive effects of urbanization will be the introduction of trees and shrubs which may enhance the environment for some wildlife types and will serve to soften the visual impact of buildings on the open land.

Siltation reaching the Carquinez Strait in runoff from urban or development areas is a potential impact which should be controlled at the source. Silt reaching the salt water habitat affects the depth of migration channels for fish, covers rocky and gravelly bottom areas required by shellfish and covers rich organic deposits sought by birds and fish in mudflat and marsh areas.

Traffic - Potential traffic problems due to increased volume, conflicting turning movements and insufficient parking are discussed in the Circulation Element; Noise - see Noise Element.

Socio-Economic Impacts - Employment, housing and age characteristics are discussed in the Housing Element; circulation efficiency and desirability of avoiding neighborhood disruption from vehicles is discussed in the Circulation Element; retaining and enhancing open space and visual resources important to community character is discussed in the Conservation Element, Open Space Element and Scenic Highways Element; relative energy costs are discussed in the Conservation Element.

SIGNIFICANT UNAVOIDABLE EFFECTS RESULTING FROM IMPLEMENTATION OF THE GENERAL PLAN

An important function of the General Plan is to establish a common understanding of what amenities will be given up, what features will

be protected and what will be improved in the future. The Plan allows an opportunity to learn about and thus avoid adverse environmental effects of uncontrolled development. Any urban development will have the effect of reducing open land. The General Plan can describe what is being taken away and relate it to what will remain untouched. The principal effects of implementing the General Plan have been identified in the General Plan and are summarized below.

Physical Changes

- . Reduction of grassland habitat in hill areas.
- . Possible increase in runoff volumes, velocities and amount of silt reaching salt water habitats along the shoreline due to impervious roof and paving surfaces and development on slopes.
- . Some sparse residential development on useful grazing land in Sky Valley.

Biological Changes

- . New roadways creating barriers to the movement of wildlife.
- . Threat to wildlife and habitat from human habitation, particularly evident at the edges of urbanization.
- . Introduction of new plant types and irrigation; possible loss of native plants; minor climatic modification.
- . Possible siltation of waterways may affect fish, shellfish and wild birds.

Circulation Changes

- . Increased traffic volumes will require parking facilities and additional traffic control devices.
- . Circulation related noise will increase in the future.

Socio-Economic Changes

- . The goal of providing a relatively low density pattern for future development will be more consumptive of energy resources than would increased density development.
- . A wider range of housing types and sizes will be required to implement the Housing Element policies.

MITIGATION MEASURES PROPOSED TO MINIMIZE ENVIRONMENTAL IMPACTS

The approach to the General Plan is to anticipate potential environmental problems and avoid as many as possible at the general plan level. The intent is to help guide subsequent specific development away from sensitive environmental areas. A detailed EIR must still be required for significant specific developments in order to analyze those characteristics of each site which are beyond the scope of the general plan. The choice and effectiveness of implementation devices will have the most effect on how well adverse effects can be mitigated. Much can be accomplished through the zoning and subdivision review procedures set forth as implementation programs in many of the General Plan elements. Mitigation of the significant unavoidable effects described in the previous section of the EIR are outlined below.

Mitigation of Physical Changes

- . Reduction of Grassland - Reduction of grassland habitat is unavoidable where it is replaced with development. Where it is allowed to remain it can be protected by drainage facilities which channel runoff around rather than over grassland so that the soil moisture content is not varied and so that erosion does not occur.
- . Runoff changes - The effects of runoff can be mitigated by placement of energy dissipators in the storm drain system to control velocity, by constructing holding ponds to allow percolation of moisture into the ground and by the construction of silt basins to trap sediment before it reaches salt water habitats.
- . Sparse residential development in the Sky Valley area will reduce useful grazing land to some extent. Pressure for increased development can be mitigated by avoiding improvement of access roads and by not creating new roads to Sky Valley. The effects on useful grazing land can be mitigated by encouraging development to locate where native vegetative growth is minimal and where soil productivity for agricultural uses is low.

Mitigation of Biological Changes

- . Roadway barriers - Phased development towards the north minimizes the incidence of roads connecting disjointed development areas creating barriers to wildlife movement. The number of new access roads to Lake Herman Road and to East 2nd Street from development in the Upland and Lake Planning Areas is minimized and the roads are located at the perimeter rather than through the center of open areas. The retention of linear parks along creekbeds and steep

slopes will be useful to wildlife as migration corridors.

- . Threat to wildlife - Mitigation of the threat from children and pets to native plants and animals, particularly at the edges of urban development, is difficult. Mitigation is intended to be provided by the provision for specific recreational trails, parks and recreation areas to serve the resident population.
- . Threat to Native Plants - The selection of plant types for residential landscaping and street trees which are natives or which are compatible with native species can minimize the effect on native plants. Resource areas such as major creekbeds and areas having significant riparian growth are intended to be protected as the plan is implemented.
- . Siltation - Mitigation of silt reaching salt water habitats can be mitigated by construction of silt basins.

Mitigation of Circulation Effects

- . Traffic volumes - Mitigation is anticipated through addition of parking facilities and traffic control devices as levels of congestion warrant.
- . Noise - The effects of noise can be mitigated through application of the noise compatibility standards and various screening methods outlined in the Noise Element.

Socio-Economic Changes

- . Energy Use - Energy costs for ongoing operations can be mitigated by various methods outlined in the Public Facilities Section of the Land Use Element. Some higher residential densities which will probably result from Housing Element implementation will minimize site improvement and construction commitments of energy resources.
- . Wider Range of Housing Types - This change is a positive change which will help avoid uniformity of community appearance and which will help provide housing for a range of family sizes, ages and income levels.

ALTERNATIVES TO THE BENICIA GENERAL PLAN

Growth form and community identity are key issues behind the community goals adopted for the General Plan. Most relevant to the discussion of alternatives is the following comparison between the revised General Plan, trends of development which were occurring under the City's earlier, 1959 plan, and the 1969 South Solano County General

Plan which covers the Benicia area. The 'no project' alternative is not a viable alternative since the General Plan is mandated by state law.

Comparison of Alternatives

REFERENCE	BENICIA PLAN	OTHER PLANS
Population Growth	From 10,600 in the City Limits in 1975 to some 25,000 by the year 2000.	<u>1959 Plan</u> - Population growth to about 23,000 by the year 1985. <u>So. Solano Plan</u> - Population growth to about 36,500 by 1985.
Growth Area	An urban planning area of 12.750 square miles.	<u>1959 Plan</u> - Area of some 6500 acres including 1600 acres devoted to the Army. <u>So. Solano Plan</u> - Planning area of some 9 - 10,000 acres.
Employment	Emphasis on development and enhancement of regionally important industrial park, separated from residential land uses, including office areas and port expansion. Emphasis on the core commercial area along First Street including marina development.	<u>1959 Plan</u> - Arsenal still in existence. Local industry is encouraged near the foot of First Street and north of the Army Arsenal. Commercial growth concentrated in the central downtown area. <u>So. Solano Plan</u> - Industry to utilize all waterfront area east from First Street. Commercial growth concentrated in the core area.
Growth Form	Emphasis placed on retaining Benicia's separate identity by preserving boundary hills to the west and developing five planning areas within an open space framework. Industrial area is buffered from surrounding uses. First Street and the waterfront is maintained as the community focus.	<u>1959 Plan</u> - Expansion of residential uses to the north of the downtown and west of the Arsenal generally on slopes of less than 15 percent. Some development in Sky Valley and near Paddy Lake. Central Benicia to remain the focus of the community. <u>So. Solano Plan</u> - Expansion of residential uses within the area bounded by Lake Herman Road and East 2nd Street. Some sparse development in Sky

Valley. Central Benicia to remain the community focus.

Geologic and
Soil Consi-
derations

Marsh areas to the south west and northeast are protected; steep slopes generally over 30 percent are avoided; major water-courses are protected; grazing land north of Lake Herman Road is protected. Geologic safety and flooding potential is discussed. Marina occupies area previously of bay mud near First Street.

1959 Plan - Marsh areas to the southwest and northeast are protected; Slopes over 15 percent are avoided; Lake Herman is protected but no specific reference to watercourses is included. Industrial use is proposed for area of bay mud near First Street.

So. Solano Plan - Marsh areas to the southwest and northeast are protected; Steep slopes are not avoided; major water-courses are not specifically referenced; bay mud areas are not referenced; Lake Herman and Pine Lake are designated as parks.

Natural
Environment

Environmental resources and sensitive environments for protective action are identified; Large preserve areas are set aside for native plant and animal life; Wildlife corridors are protected; Useful grazing land is discussed.

1959 Plan - Plan adopted prior to CEQA. Park and agriculture designations are given to sensitive marsh areas, Sky Valley and Lake Herman.

So. Solano Plan - Plan adopted prior to CEQA; Park and agriculture designations given to sensitive marsh areas, hills north of Lake Herman Road and to Lake Herman.

Circulation

Limits to four the number of entry points to the community. Describes a circulation system to bring residents to the downtown efficiently; Street beautification outlined; Historic route recommended.

1959 Plan - Plan prepared prior to the freeway. New internal roads shown serving new development to the north and connecting through the hills to the west.

So. Solano Plan - Plan prepared with regional freeway system in mind; New internal roads shown serving new development north and connecting through the hills to the west.

Community
Image

Emphasis on preserving Benicia's separate identity. Special emphasis on restricting the number of entry points to the community and avoiding new roads through the hills to the west. Emphasis on the scenic quality and scale of development visible from the freeway system; discourages strip commercial development and freeway exploitation. Plan for low density and middle income image. Preservation of rural feeling to the north. Emphasis on historic and water-oriented qualities.

1959 Plan - Plan proposes waterfront enhancement, high quality residential development in the hills and a yacht harbor west of First Street. Strip commercial development is discouraged.
So. Solano Plan - Plan proposes open space buffer from Vallejo to the west and scenic treatment of the freeway through Benicia. Some attention to the sense of entry to Benicia. Promotes waterfront enhancement; discourages strip commercial development; proposes a marina west of First Street.

LOCAL SHORT-TERM USE OF THE ENVIRONMENT VERSUS THE MAINTENANCE AND
ENHANCEMENT OF LONG TERM PRODUCTIVITY

The Benicia General Plan carefully considers the demand on land as a resource. Open space is set aside within and around development areas to preserve and maintain valuable natural habitat areas. Marsh areas along the shoreline are preserved, useful grazing lands north of Lake Herman Road are recommended for protection and various steep slopes and drainage-ways are set aside for open space or park purposes. No significant mineral resources are known in the City Limits. Overall, short term use of the land has been equated with long term environmental benefit in the plan.

Water and air resources are affected if the plan is implemented. Water supply and demand on sewage facilities are discussed in the Land Use Element and recommendations are made for necessary expansion. Mitigation of water quality effects is discussed above; mitigation of air quality effects is discussed in the Conservation Element. Potential conflicts between normally incompatible land uses are discussed in the Land Use Element and mitigation methods described.



IRREVERSIBLE ENVIRONMENTAL CHANGES INVOLVED IN THE IMPLEMENTATION OF THE BENICIA GENERAL PLAN

As the Plan is implemented, vacant land will be committed to urban use. Major habitat areas and physical attributes of the community setting are identified in the Plan and policies and programs set forth to preserve, use and maintain them. If the plan were not available, it is quite possible that more of the distinctive characteristics of the Benicia setting would be obliterated. It is quite possible that Benicia's separate identity would be lost, that future conflicts between incompatible land uses would occur and that opportunities to enhance the City both visually and economically might be foreclosed.

GROWTH INDUCING IMPACTS RESULTING FROM PLAN IMPLEMENTATION

The Benicia General Plan defines appropriate areas for growth in the future, but adoption of the Plan does not induce development. Urban growth limits are defined and densities consistent with community goals are set forth. Five planning areas for future growth are identified and each has identifiable boundaries thus undefined sprawl is avoided. Additional roads through the hills to the west are discouraged in order to control sprawl, the potential for Benicia to be connected with future suburbs of Vallejo, and to protect Benicia's separate identity. Improvement to roads into Sky Valley is also discouraged as growth inducing. Lake Herman is described as a potential community park rather than a regional park to avert regional focus.

The Benicia Plan does promote the growth and development of the First Street Core Commercial area in the interest of improving the local employment and economic base. Visual improvements recommended in the Plan, together with future economic growth, may induce earlier commitment of undeveloped land within the plan area than might have otherwise occurred.

EIR DISTRIBUTION LIST

The list of people and agencies to which EIR materials are forwarded is on file with the Benicia City Clerk.

WRITTEN COMMENTS ON DRAFT EIR

Written comments are on file with the Benicia City Clerk.

IMPACT REPORT PREPARATION

The original General Plan EIR was prepared by the staff of the Hall and Goodhue Community Design Group; project manager was Malcolm C. Carpenter. The above, updated EIR was prepared by Martin-Carpenter Associates; project manager was Malcolm C. Carpenter.